

# **Site Investigation Findings Report**

## **Tannery Sludge Farm Fields Site**

### **Andrew, Buchanan, Clinton and DeKalb Counties, MO**

### **Order Number: 100413005**

**Site Information:**ESP LDPR Code: FEPA8ESP Staff: Ken Hannon, Sean Counihan, Brad SwankHWP Staff: Michal Stroh, Shelly Jackson, Valerie WilderJob Code: NJ10TSFFInvestigation Date: 4/6 and 4/7, 2010

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**Introduction:**

The Missouri Department of Natural Resources (MDNR) Hazardous Waste Program (HWP) requested Environmental Services Program (ESP) personnel to conduct sampling related to an ongoing investigation involving the Prime Tanning Corporation located at 205 Florence Road in St. Joseph, Missouri. This Findings Report is intended as an interim measure to document recent sampling activities. A full project report will be written by the HWP project manager when sample results have been received and evaluated. ESP Environmental Specialists Ken Hannon, Brad Swank and Sean Counihan traveled to the site on April 6 and 7, 2010, to collect grab samples of soils from selected residences and farm fields where tannery sludge was historically applied as a fertilizer. Additional MDNR personnel on site included Valerie Wilder, Michael Stroh and Shelly Jackson with the HWP, site assessment unit. Sampling was conducted in accordance with established standard operating procedures (SOPs) within the MDNR, ESP and as outlined in the Tannery Sludge Farm Field Sampling and Analysis Plan (SAP), January 14, 2010 and the Farm Fields and Residential Yards Sampling and Analysis Plan Addendum (SAP Addendum), April 5, 2010.

**Observations:**

Personnel arrived on-site the afternoon of April 6, 2010, and began sampling in selected agricultural fields and residential yards. Custody of all samples collected was maintained by HWP personnel. Weather conditions generally mild with temperatures ranging from morning lows of 35 degrees to afternoon highs around 70 degrees Fahrenheit. Winds were low to moderate and from the west to southwest, increasing towards the afternoons. Fifteen residential yard decision unit incremental samples (DUIS) (including four background yards), and five background farm field DUIS were sampled during this event. In addition, incremental samples were collected from three 1-acre farm field sampling units in triplicate for quality control purposes. Sampling locations are shown in the map in Appendix A. No deviations from the SAP or the SAP Addendum were noted at any sample locations.

On April 7, 2010, Mr. Matt Sugar of ARCADIS Consulting met with DNR personnel and collected replicate samples at residential yard Location ID 312 and farm field Location ID 214.

**Field Methods:**

Below is a brief discussion of the sampling activities conducted. A more detailed description of sampling procedures is outlined in the SAP and SAP Addendum.

Ten-increment soil samples were collected from the 0-1 inch depth within three 1-acre sampling units at each of five background farm field decision units. At three previously-sampled target farm field decision units, triplicate sampling unit incremental samples (SUIS) samples were also collected for quality control (QC). One sample was split and processed as a blind field duplicate to assess precision. The samples were air dried, disaggregated and passed through a #60 mesh sieve. The background and QC SUIS samples were then analyzed for total chromium with an x-ray fluorescence (XRF) analyzer. The background SUIS samples were then combined to form DUIS samples, which were also analyzed by XRF. The background DUIS and QC SUIS were then placed into sample containers and submitted for analysis of hexavalent chromium on April 14, 2010. Some samples were also analyzed for the following parameters: pH, TOC, ORP, percent moisture, Cr, Fe, Mn, Mo, V, and Al. Two farm field samples were analyzed in duplicate by the laboratory to assess subsampling and analytical precision.

Residential yards were divided into Sampling Units (SU) according to each specific site location and recorded field forms (Appendix B). Fifteen to twenty soil increments were collected from a depth of 0-1 inch and combined in the field to create one DUIS for each resident yard sampled. All soil samples transported to the ESP lab and allowed to air dry at ambient temperatures for four days. The samples were then disaggregated and passed through a #60 mesh (0.25mm) sieve. The material passing through the sieve was placed into sample containers and submitted for analysis of the following parameters on April 14, 2010: pH, TOC, ORP, percent moisture, Cr, Cr<sup>+6</sup>, Fe, Mn, Mo, V, and Al. Two yard soil samples were analyzed in duplicate by the laboratory to assess subsampling and analytical precision. Aqueous matrix spikes were requested for Cr<sup>+6</sup> on every yard sample to evaluate matrix effects. In addition, for select samples, solid matrix spikes were requested using a NIST standard reference material containing a known concentration of Cr<sup>+6</sup>.

Table 1 is a listing of the samples collected. Chains of custody are provided in Appendix B.

| <b>Table 1: Sample Collection Data</b> |                       |                       |  |
|--|-----------------------|-----------------------|--|
| <b>Sample Number</b>                   | <b>Date Collected</b> | <b>Time Collected</b> | <b>Location Collected &amp; Description</b>                                |
| 1004716                                | 4/6/10                | 0950                  | Farm field soil location 201, DUIS. (Background)                           |
| 1004717                                | 4/6/10                | 1518                  | Farm field soil location 251, DUIS. (Background)                           |
| 1004718                                | 4/6/10                | 1620                  | Farm field soil location 252, DUIS. (Background)                           |
| 1004719                                | 4/6/10                | 1617                  | Farm field soil location 253, DUIS. (Background)                           |
| 1004720                                | 4/6/10                | 1239                  | Farm field soil location 254, DUIS. (Background)                           |
| 1004721                                | 4/6/10                | 0941                  | Residential soil composite collected from Location 301, DUIS. (Background) |
| 1004722                                | 4/6/10                | 1430                  | Residential soil composite collected from Location 302, DUIS.              |
| 1004723                                | 4/6/10                | 1227                  | Residential soil composite collected from Location 303, DUIS.              |
| 1004724                                | 4/6/10                | 1255                  | Residential soil composite collected from Location 304, DUIS.              |
| 1004725                                | 4/6/10                | 1316                  | Residential soil composite collected from Location 305, DUIS.              |
| 1004726                                | 4/6/10                | 1306                  | Residential soil composite collected from Location 306, DUIS.              |

| Table 1: Sample Collection Data |                |                |  |
|---------------------------------|----------------|----------------|--|
| Sample Number                   | Date Collected | Time Collected | Location Collected & Description   |
| 1004727                         | 4/7/10         | 0818           | Residential soil composite collected from Location 312, DUIS.              |
| 1004728                         | 4/6/10         | 1415           | Residential soil composite collected from Location 313, DUIS.              |
| 1004729                         | 4/6/10         | 1350           | Residential soil composite collected from Location 319, DUIS.              |
| 1004730                         | 4/6/10         | 1407           | Residential soil composite collected from Location 320, DUIS.              |
| 1004731                         | 4/6/10         | 1510           | Residential soil composite collected from Location 325, DUIS.              |
| 1004732                         | 4/6/10         | 1516           | Residential soil composite collected from Location 326, DUIS.              |
| 1004733                         | 4/6/10         | 1520           | Residential soil composite collected from Location 352, DUIS. (Background) |
| 1004734                         | 4/6/10         | 1753           | Residential soil composite collected from Location 353, DUIS. (Background) |
| 1004735                         | 4/6/10         | 1215           | Residential soil composite collected from Location 354, DUIS. (Background) |
| 1004736                         | 4/6/10         | 1241           | Farm field soil location 205, SU 88, replicate 1.                          |
| 1004737                         | 4/6/10         | 1245           | Farm field soil location 205, SU 88, replicate 2.                          |
| 1004738                         | 4/6/10         | 1253           | Farm field soil location 205, SU 88, replicate 3.                          |
| 1004739                         | 4/7/10         | 0835           | Farm field soil location 214, SU 37, replicate 1.                          |
| 1004740                         | 4/7/10         | 0845           | Farm field soil location 214, SU 37, replicate 2.                          |
| 1004741                         | 4/7/10         | 0855           | Farm field soil location 214, SU 37, replicate 3.                          |
| 1004742                         | 4/6/10         | 1624           | Farm field soil location 221, SU 161, replicate 1.                         |
| 1004743                         | 4/6/10         | 1632           | Farm field soil location 221, SU 161, replicate 2.                         |
| 1004744                         | 4/6/10         | 1640           | Farm field soil location 221, SU 161, replicate 3.                         |
| 1004745                         | 4/6/10         | -----          | Blind replicate of 1004744   |

### Findings:

Full analytical results are provided in Appendix B. A summary of the results is provided in Tables 2 and 3 on the following page. A copy of field notes and photo log is provided in Appendix C.

None of the farm field or residential yard soil samples was found to contain concentrations of hexavalent chromium above the screening levels developed for the project. The data are currently undergoing data quality review and statistical uncertainty analysis. Results of this analysis will be provided in the full project report anticipated to be finalized in late summer 2010.

**Table 2: Summary of Farm Field Sample Results**

| Tag Number | DU          | SU  |                  | Date Collected | Cr 6 <sup>+</sup> , mg/kg | Total Cr, mg/kg (XRF) | ORP (mV) | TOC, % | pH   | Fe, mg/kg | Mn, mg/kg | Mo, mg/kg | V, mg/kg | Al, mg/kg |
|------------|-------------|-----|------------------|----------------|---------------------------|-----------------------|----------|--------|------|-----------|-----------|-----------|----------|-----------|
| 1004739    | 214         | 37  | Repl1            | 4/7/2010       | 1.13                      | 264                   | 413      | 5.8    | 7.89 | 30,000    | 417       | 2.05      | 38.5     | 16,000    |
| 1004740    | 214         | 37  | Repl2            | 4/7/2010       | 0.715                     | 289                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004741    | 214         | 37  | Repl3            | 4/7/2010       | 0.674                     | 267                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004736    | 205         | 88  | Repl1            | 4/6/2010       | 1.110                     | 105                   | 467      | 3      | 6.57 | 27,000    | 575       | 1.11      | 38.2     | 15,100    |
| 1004736    | 205 Lab Dup | 88  | Repl1            | 4/6/2010       | 0.938                     | NA                    | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004737    | 205         | 88  | Repl2            | 4/6/2010       | 0.652                     | 149                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004738    | 205         | 88  | Repl3            | 4/6/2010       | 0.779                     | 159                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004742    | 221         | 162 | Repl1            | 4/6/2010       | 3.45                      | 97                    | 425      | 2.1    | 7.58 | 20,300    | 383       | 0.461     | 47.2     | 17,300    |
| 1004743    | 221         | 162 | Repl2            | 4/6/2010       | 4.57                      | 115                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004744    | 221         | 162 | Repl3            | 4/6/2010       | 4.38                      | 105                   | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004745    | 221         | 162 | Repl3 Blind Dup  | 4/6/2010       | 3.76                      | NA                    | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004716    | 201         | 0   | Background Field | 4/6/2010       | 0.060                     | 33                    | 442      | 3.1    | 6.52 | 15500     | 281       | 0.797     | 43.9     | 13200     |
| 1004716    | 201 Lab Dup | 0   | Background Field | 4/6/2010       | 0.063                     | NA                    | NA       | NA     | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004717    | 251         | 0   | Background Field | 4/6/2010       | 0.178                     | 29                    | 460      | 6.03   | 6.03 | 14200     | 288       | 0.538     | 41.2     | 14800     |
| 1004718    | 252         | 0   | Background Field | 4/6/2010       | 0.132                     | 32                    | 546      | 6.31   | 6.31 | 18400     | 462       | 0.582     | 43.2     | 18200     |
| 1004719    | 253         | 0   | Background Field | 4/6/2010       | 0.083                     | 30                    | 470      | 6.47   | 6.47 | 15000     | 487       | 0.488     | 32.8     | 12700     |
| 1004720    | 254         | 0   | Background Field | 4/6/2010       | 0.039                     | 26                    | 482      | 6.19   | 6.19 | 14000     | 411       | 0.827     | 32.9     | 12100     |



**Table 3: Summary of Residential Yard Sample Results**

| Tag Number | DU          | SU              | Date Collected | Cr 6+, mg/kg | TOC (%) | ORP | pH   | Fe, mg/kg | Mn, mg/kg | Mo, mg/kg | V, mg/kg | Al, mg/kg |
|------------|-------------|-----------------|----------------|--------------|---------|-----|------|-----------|-----------|-----------|----------|-----------|
| 1004729    | 319         | Yard            | 4/6/2010       | 0.073        | 3.1     | 444 | 7.25 | 20600     | 800       | 0.893     | 44.5     | 17600     |
| 1004725    | 305         | Yard            | 4/6/2010       | 0.233        | 3.2     | 431 | 7.54 | 16100     | 705       | 0.779     | 34.5     | 13500     |
| 1004730    | 320         | Yard            | 4/6/2010       | 0.325        | 1.4     | 443 | 7.14 | 21200     | 757       | 0.71      | 44.2     | 17800     |
| 1004730    | 320 Lab Dup | Yard            | 4/6/2010       | 0.312        | NA      | NA  | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004731    | 325         | Yard            | 4/6/2010       | 0.153        | 2.3     | 441 | 7.55 | 14100     | 374       | 0.549     | 27.7     | 8850      |
| 1004732    | 326         | Yard            | 4/6/2010       | 0.086        | 1.4     | 451 | 7.54 | 13500     | 345       | 0.527     | 26.3     | 8420      |
| 1004727    | 312         | Yard            | 4/6/2010       | 0.049        | 1.5     | 430 | 7.72 | 19000     | 687       | 1.04      | 40.1     | 15900     |
| 1004728    | 313         | Yard            | 4/6/2010       | 0.148        | 2.3     | 435 | 7.25 | 13500     | 559       | 0.578     | 35.3     | 14800     |
| 1004724    | 304         | Yard            | 4/6/2010       | 0.290        | 5.2     | 416 | 7.78 | 16700     | 549       | 0.631     | 38.3     | 14600     |
| 1004723    | 303         | Yard            | 4/6/2010       | 0.02(J)      | 3.7     | 433 | 7.15 | 13900     | 224       | 0.495     | 35.9     | 17400     |
| 1004723    | 303 Lab Dup | Yard            | 4/6/2010       | 0.022 (J)    | NA      | NA  | NA   | NA        | NA        | NA        | NA       | NA        |
| 1004726    | 306         | Yard            | 4/6/2010       | 0.096        | 2       | 436 | 7.47 | 17600     | 768       | 0.49      | 33.5     | 13300     |
| 1004722    | 302         | Yard            | 4/6/2010       | 0.110        | 2.4     | 464 | 6.49 | 16300     | 535       | 0.552     | 38.3     | 15700     |
| 1004721    | 301         | Background Yard | 4/6/2010       | 0.053        | 3.9     | 454 | 7.03 | 15200     | 510       | 0.627     | 37.7     | 15900     |
| 1004733    | 352         | Background Yard | 4/6/2010       | 0.034        | 3.4     | 450 | 7.41 | 17400     | 607       | 0.785     | 33.5     | 13900     |
| 1004734    | 353         | Background Yard | 4/6/2010       | 0.050        | 2.2     | 442 | 7.90 | 15400     | 636       | 0.938     | 22.2     | 9260      |
| 1004735    | 354         | Background Yard | 4/6/2010       | 0.095        | 2.2     | 440 | 7.00 | 16400     | 384       | 0.552     | 36.8     | 16300     |

Submitted by:

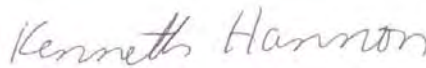


Michael Stroh  
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6/30/10

(Date)

Reviewed by:



Ken Hannon  
Environmental Specialist  
Field Services Unit  
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Section - EER, ou=Department of Natural  
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Reason: I am the author of this document  
Date: 2010.07.16 14:12:28 -05'00'

Approved by:



Eric Sappington  
Unit Chief  
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Environmental Services Program

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DN: cn=Eric Sappington, c=US,  
o=Environmental Services Program,  
ou=Department of Natural Resources,  
email=eric.sappington@dnr.mo.gov  
Date: 2010.07.16 14:22:10 -05'00'

## **APPENDIX A**

### **Site Map**

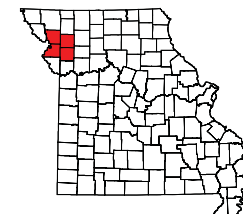
Tannery Sludge Farm Fields Site  
Andrew, Buchanan, Clinton and DeKalb Counties, MO



# Tannery Sludge Farm Fields Site Sampling Locations for April 2010 Sampling Event Andrew, Buchanan, Clinton and DeKalb Counties Northwest Missouri

## Legend

- Residential Soil Sample
- Residential Soil Sample - Background
- Field Soil Sample
- Field Soil Sample - Background
- Missouri River
- County Boundary
- Federal Roads**
- Interstate Highway
- US Highway
- Municipal Boundary



Map Created on June 25, 2010 by Shelly Jackson.

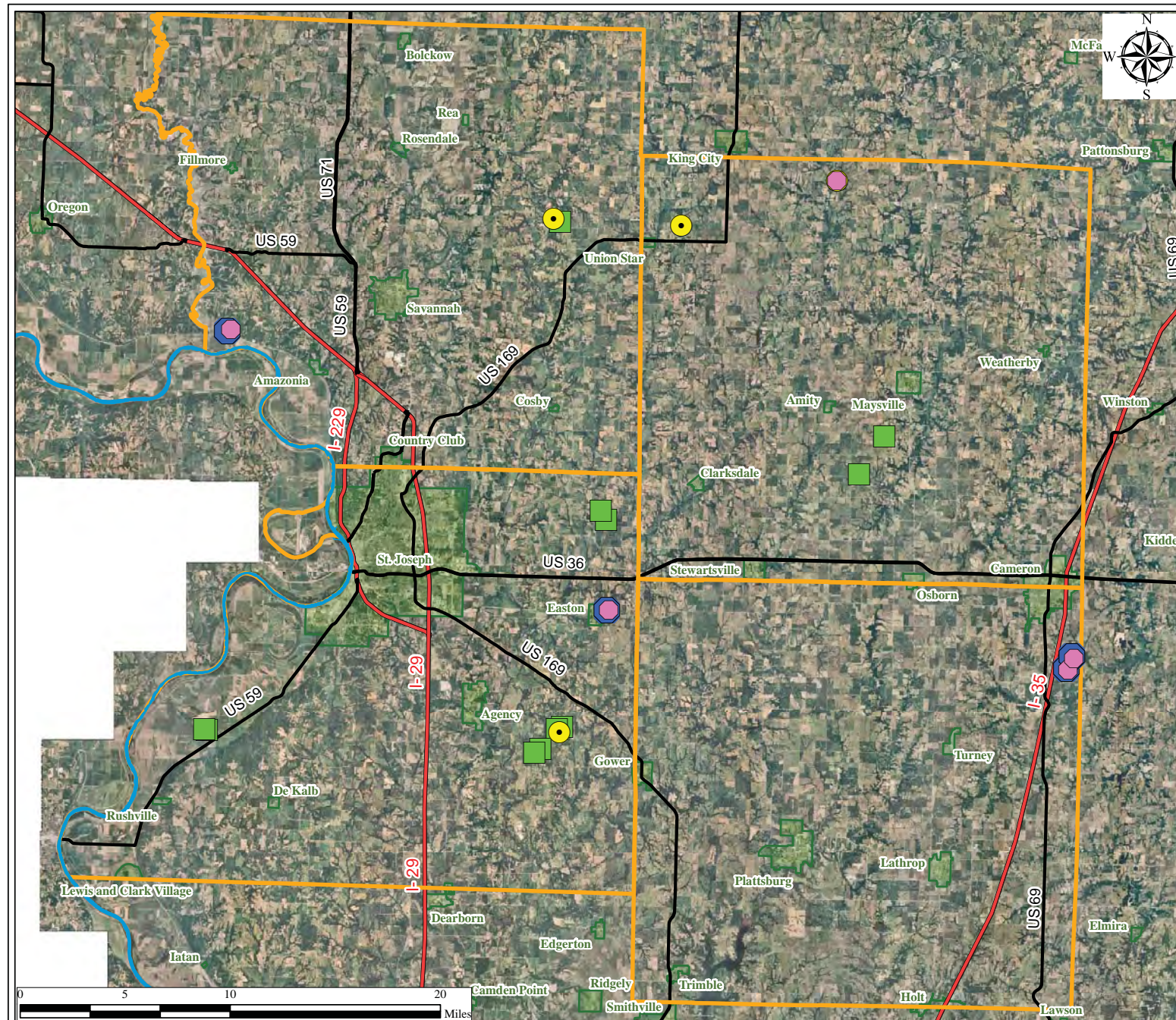
This map can be found at M:\Superfund\Tannery Sludge Farm Fields\Maps\2010April\_SamplingMap.mxd

Base Map: National Agricultural Image Program. Flight Date: 2007.

Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.



**Missouri Department of  
Natural Resources**  
Division of Environmental Quality  
Hazardous Waste Program



## **APPENDIX B**

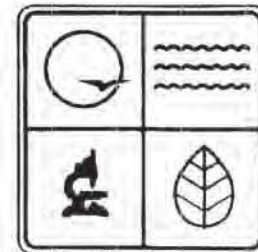
### **Chain of Custody/Analytical Results**

Tannery Sludge Farm Fields Site  
Andrew, Buchanan, Clinton and DeKalb Counties, MO





Missouri Department of Natural Resources  
Environmental Services Program



Order ID 100413005

Program, Contact: HWP Julieann Warren

Report Date: 05/26/2010

LDPR/JobCode: FEPA8 / NJ10TSFF



Sample: AB18511



Customer #: 1004716

Facility ID:

County: Multiple

Collector: KEN HANNON

Entry Point:

Sample Comment: FF DUIS

Site: Tannery Sludge Farm Fields

Sample Reference ID: 201

Affiliation: ESP

Collect Date: 4/6/2010 9:50:00AM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 13200000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 19600    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 15500000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 281000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 797      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 43900    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.060    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 442      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.4      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.65     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.52     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.1      | 04        |          | 5,060       | Contract Lab Dep |

Sample: AB18512



Customer #: 1004717

Facility ID:

County: Multiple

Collector: KEN HANNON

Entry Point:

Sample Comment: FF DUIS

Site: Tannery Sludge Farm Fields

Sample Reference ID: 251

Affiliation: ESP

Collect Date: 4/6/2010 3:18:00PM

| Test                           | Parameter | Result   | Qualifier | Units | QC Batch ID | Method       |
|--------------------------------|-----------|----------|-----------|-------|-------------|--------------|
| 6010B Metals-Total Recoverable | Aluminum  | 14800000 | 09        | µg/kg | 5,248       | SW 846 6010B |
| 6010B Metals-Total Recoverable | Chromium  | 18800    |           | µg/kg | 5,248       | SW 846 6010B |
| 6010B Metals-Total Recoverable | Iron      | 14200000 | 09        | µg/kg | 5,248       | SW 846 6010B |
| 6010B Metals-Total Recoverable | Manganese | 288000   |           | µg/kg | 5,248       | SW 846 6010B |

**Sample: AB18512****Customer #: 1004717****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** FF DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 251**Affiliation:** ESP**Collect Date:** 4/6/2010 3:18:00PM

| Test                           | Parameter                     | Result | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|--------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Molybdenum                    | 538    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 41200  |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.18   | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 460    | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 3.8    | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 3.32   |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.03   | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 1.2    | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18513****Customer #: 1004718****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** FF DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 252**Affiliation:** ESP**Collect Date:** 4/6/2010 4:20:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 18200000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 21500    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 18400000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 462000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 582      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 43200    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.13     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 456      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.3      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.34     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.31     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.3      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18514****Customer #: 1004719****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** FF DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 253**Affiliation:** ESP**Collect Date:** 4/6/2010 4:17:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 12700000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 16600    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 15000000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 487000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 488      | 05        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 32800    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.083    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 470      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.4      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.23     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.47     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.1      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18515****Customer #: 1004720****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** FF DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 254**Affiliation:** ESP**Collect Date:** 4/6/2010 12:39:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 12100000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 17300    | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 14000000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 411000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 827      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 32900    | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.039    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 482      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.7      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.77     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.19     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.7      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18516****Customer #: 1004721****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 301**Affiliation:** ESP**Collect Date:** 4/6/2010 9:41:00AM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 15900000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 18900    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 15200000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 510000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 627      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 37700    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.053    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 454      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.6      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.52     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.03     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.9      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18517****Customer #: 1004722****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 302**Affiliation:** ESP**Collect Date:** 4/6/2010 2:30:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 15700000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 20000    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 16300000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 535000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 552      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 38400    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.11     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 464      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.1      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.29     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.49     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.4      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18518****Customer #: 1004723****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 303**Affiliation:** ESP**Collect Date:** 4/6/2010 12:27:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 17400000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 18300    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 13900000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 224000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 495      | 05        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 35900    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.020    | 04,05     | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 433      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.1      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 3.92     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.15     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.7      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18519****Customer #: 1004724****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 304**Affiliation:** ESP**Collect Date:** 4/6/2010 12:55:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 14600000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 19700    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 16700000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 549000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 631      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 38300    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.029    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 416      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.2      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.15     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.78     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 5.2      | 04        |          | 5,060       | Contract Lab Dep |

**Sample:** AB18520**Customer #:** 1004725**Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 305**Affiliation:** ESP**Collect Date:** 4/6/2010 1:16:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 13500000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 19000    |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 16100000 | 09        | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 705000   |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 779      |           | µg/kg    | 5,248       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 34500    |           | µg/kg    | 5,248       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.23     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 431      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.6      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.59     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.54     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.2      | 04        |          | 5,060       | Contract Lab Dep |

**Sample:** AB18521**Customer #:** 1004726**Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 306**Affiliation:** ESP**Collect Date:** 4/6/2010 1:06:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 13300000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 17100    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 17600000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 768000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 490      | 05        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 33500    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.096    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 436      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.0      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.99     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.47     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.0      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18522****Customer #: 1004727****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 312**Affiliation:** ESP**Collect Date:** 4/7/2010 8:18:00AM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 15900000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 30000    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 19000000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 687000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 1040     |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 40100    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.049    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 430      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.2      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.48     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.72     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 1.8      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18523****Customer #: 1004728****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 313**Affiliation:** ESP**Collect Date:** 4/6/2010 2:15:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 14800000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 23100    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 15300000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 559000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 578      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 35300    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.15     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 435      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.5      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.27     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.25     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.3      | 04        |          | 5,060       | Contract Lab Dep |

**Sample:** AB18524**Customer #:** 1004729**Facility ID:**  
**County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 319**Affiliation:** ESP**Collect Date:** 4/6/2010 1:50:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 17600000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 22500    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 20600000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 800000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 893      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 44500    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.073    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 444      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 11.9     | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 11.65    |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.25     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.1      | 04        |          | 5,060       | Contract Lab Dep |

**Sample:** AB18525**Customer #:** 1004730**Facility ID:**  
**County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 320**Affiliation:** ESP**Collect Date:** 4/6/2010 2:07:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 17800000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 25800    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 21200000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 757000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 710      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 44200    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.32     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 443      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.1      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.31     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.14     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 1.4      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18526****Customer #: 1004731****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 325**Affiliation:** ESP**Collect Date:** 4/6/2010 3:10:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 8850000  | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 22600    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 14100000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 374000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 549      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 27700    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.15     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 441      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.5      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.88     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.55     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.3      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18527****Customer #: 1004732****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 326**Affiliation:** ESP**Collect Date:** 4/6/2010 3:16:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 8420000  | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 15700    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 13500000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 345000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 527      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 26300    |           | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.086    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 451      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 5.0      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.84     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.54     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 1.4      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18528****Customer #: 1004733****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 352**Affiliation:** ESP**Collect Date:** 4/6/2010 3:20:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 13900000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 17900    | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 17400000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 607000   | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 785      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 33500    | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.034    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 450      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.8      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 3.13     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.41     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.4      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18529****Customer #: 1004734****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 353**Affiliation:** ESP**Collect Date:** 4/6/2010 5:53:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 9260000  | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 16800    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 15400000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 636000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 938      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 22200    | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.050    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 442      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.4      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.92     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.90     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.2      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18530****Customer #: 1004735****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** YARD DUIS**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 354**Affiliation:** ESP**Collect Date:** 4/6/2010 12:15:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 16300000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 21200    |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 16400000 | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 384000   |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 552      |           | µg/kg    | 5,249       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 36800    | 09        | µg/kg    | 5,249       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 0.095    | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 440      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.8      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 6.74     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.00     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.2      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18531****Customer #: 1004736****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 88 repl 1**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 205**Affiliation:** ESP**Collect Date:** 4/6/2010 12:41:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 15100000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 145000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 27000000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 575000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 1110     |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 38200    |           | µg/kg    | 5,250       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 1.11     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 467      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.5      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 7.90     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 6.57     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 3.0      | 04        |          | 5,060       | Contract Lab Dep |



**Sample: AB18532****Customer #: 1004737****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 88 repl 2**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 205**Affiliation:** ESP**Collect Date:** 4/6/2010 12:45:00PM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 0.65   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 6.5    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample: AB18533****Customer #: 1004738****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 88 repl 3**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 205**Affiliation:** ESP**Collect Date:** 4/6/2010 12:52:00PM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 0.78   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 7.0    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample: AB18534****Customer #: 1004739****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 37 repl 1**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 214**Affiliation:** ESP**Collect Date:** 4/7/2010 8:35:00AM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 16000000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 377000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 30000000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 417000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 2050     |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 39500    |           | µg/kg    | 5,250       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 1.13     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 413      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 3.8      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 4.24     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.89     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 5.8      | 04        |          | 5,060       | Contract Lab Dep |

**Sample: AB18535****Customer #: 1004740****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 37 repl 2**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 214**Affiliation:** ESP**Collect Date:** 4/7/2010 8:45:00AM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 0.72   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 9.2    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample: AB18536****Customer #: 1004741****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 37 repl 3**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 214**Affiliation:** ESP**Collect Date:** 4/7/2010 8:55:00AM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 0.67   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 3.9    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample: AB18537****Customer #: 1004742****Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 161 repl 1**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 221**Affiliation:** ESP**Collect Date:** 4/6/2010 4:24:00PM

| Test                           | Parameter                     | Result   | Qualifier | Units    | QC Batch ID | Method           |
|--------------------------------|-------------------------------|----------|-----------|----------|-------------|------------------|
| 6010B Metals-Total Recoverable | Aluminum                      | 17300000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Chromium                      | 132000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Iron                          | 20300000 | 09        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Manganese                     | 383000   |           | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Molybdenum                    | 461      | 05        | µg/kg    | 5,250       | SW 846 6010B     |
| 6010B Metals-Total Recoverable | Vanadium                      | 47200    |           | µg/kg    | 5,250       | SW 846 6010B     |
| Hexavalent Chromium            | Hexavalent Chromium           | 3.45     | 04        | mg/Kg    | 5,054       | Contract Lab Dep |
| Oxidation Reduction Potential  | Oxidation Reduction Potential | 425      | 04        | mV       | 5,061       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.9      | 04        | %        | 5,055       | Contract Lab Dep |
| Percent Moisture               | Percent Moisture              | 2.59     |           | %        | 4,724       | Infrared Drying  |
| pH                             | pH                            | 7.58     | 04        | pH Units | 5,062       | Contract Lab Dep |
| Total Organic Carbon           | Total Organic Carbon          | 2.1      | 04        |          | 5,060       | Contract Lab Dep |



**Sample:** AB18538**Customer #:** 1004743**Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 161 repl 2**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 221**Affiliation:** ESP**Collect Date:** 4/6/2010 4:32:00PM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 4.57   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 3.8    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample:** AB18539**Customer #:** 1004744**Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** SU 161 repl 3**Site:** Tannery Sludge Farm Fields**Sample Reference ID:** 221**Affiliation:** ESP**Collect Date:** 4/6/2010 4:40:00PM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 4.38   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 7.1    | 04        | %     | 5,055       | Contract Lab Dep |

**Sample:** AB18540**Customer #:** 1004745**Facility ID:****County:** Multiple**Collector:** KEN HANNON**Entry Point:****Sample Comment:** BLIND REPLICATE**Site:** Tannery Sludge Farm Fields**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 4/6/2010 12:00:00AM

| Test                | Parameter           | Result | Qualifier | Units | QC Batch ID | Method           |
|---------------------|---------------------|--------|-----------|-------|-------------|------------------|
| Hexavalent Chromium | Hexavalent Chromium | 3.76   | 04        | mg/Kg | 5,054       | Contract Lab Dep |
| Percent Moisture    | Percent Moisture    | 7.1    | 04        | %     | 5,055       | Contract Lab Dep |

Chris Boldt

Chris Boldt, Laboratory Manager  
Environmental Services Program  
Field Services Division

#### Qualifier Descriptions

- |  |   |
|--|---|
| 01 Improper collection method                            | 02 Improper preservation                            |
| 03 Exceeded holding time                                 | 04 Analyzed by Contract Laboratory                  |
| 05 Estimated value, detected below PQL                   | 06 Estimated value, QC data outside limits          |
| 07 Estimated value, analyte outside calibration range    | 08 Analyte present in blank at > 1/2 reported value |
| 09 Sample was diluted during analysis                    | 10 Laboratory error                                 |
| 11 Estimated value, matrix interference                  | 12 Insufficient quantity                            |
| 13 Estimated value, true result is >= reported value     | 14 Estimated value, non-homogeneous sample          |
| 15 No Result - Failed Quality Controls Requirements      | 16 Not analyzed - related analyte not detected      |
| 17 Results in dry weight                                 | 18 Sample pH is outside the acceptable range        |
| 19 Estimated value                                       | 20 Not analyzed - Instrument failure                |
| 21 No result - spectral interference                     | 22 pH was performed at the Laboratory               |
| 23 Contract Lab specific qualifier - see sample comments | 24 No result - matrix interference                  |
| ND Not detected at reported value                        |   |







May 11, 2010

Michael Stroh  
Missouri Department of Natural Resources / Hazardous Waste Program  
P.O. Box 176  
Jefferson City, MO 65102  
(573) 522-9902

Dear Mr. Stroh,

Attached is the report associated with thirty (30) soil samples submitted for hexavalent chromium quantitation and conventionals (TOC, percent moisture, pH, and ORP) analyses on April 14, 2010. The samples were received on April 15, 2010 in sealed containers at -4°C. The submitted samples were extracted using EPA Method 3060A and then analyzed for hexavalent chromium via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS). All conventionals analyses were performed using established methods as described in this report. Any analytical issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Ben Wozniak  
Project Manager  
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report Prepared for:

Michael Stroh  
Missouri Department of Natural Resources / Hazardous Waste Program  
P.O. Box 176  
Jefferson City, MO 65102

May 11, 2010

## 1. Sample Reception

Thirty (30) soil samples were submitted in wide-mouth glass jars (not provided by Applied Speciation and Consulting) for hexavalent chromium quantitation and conventionals (TOC, percent moisture, pH, and ORP) analyses on April 14, 2010. The samples were received in acceptable condition on April 15, 2010 in sealed containers at -4°C.

All samples were received in a laminar flow clean hood void of trace metals contamination and ultra-violet radiation. Upon reception, all samples were designated discrete sample identifiers and then stored in a secure, monitored refrigerator (maintained at a temperature of  $\leq 4^{\circ}\text{C}$ ) until all preparatory and analytical procedures could be performed. Splits of each sample requesting TOC analysis were distributed to Amtest Inc.

## 2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Hexavalent Chromium Quantification by IC-ICP-DRC-MS Prior to analysis, all samples were extracted using EPA Method 3060A on either April 19<sup>th</sup> (Batch C4), April 20<sup>th</sup> (Batches C2 and C3), or April 23<sup>rd</sup> (Batch C1). In summary, each sample was first spread into a thin layer onto a clean surface and a known mass of each sample was then weighed into a polypropylene centrifuge tube by taking approximately fifteen random subsamples of the original sample. A buffered alkaline extraction solution,  $\text{MgCl}_2$ , and a phosphate buffer solution were then applied to each sample. All vials were then heated at 90-95°C in a sonicating bath for a minimum of one (1) hour. The resulting extracts were cooled, filtered, and injected directly into sealed autosampler vials prior to analysis for hexavalent chromium.

pH and ORP Analyses Prior to the analyses, all samples submitted for pH and ORP measurements were prepared in accordance with EPA Method 9045D on April 21, 2010. In summary, a known mass of each sample was placed into a polypropylene centrifuge tube and an equivalent mass of reagent water was also added. The resulting suspensions were shaken for five (5) minutes, after which each was briefly centrifuged and then decanted into a new centrifuge vial. Each sample extract was then analyzed for pH and ORP as described herein.

### 3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform. All hexavalent chromium sample results have also been **dry-weight corrected** using the measured total solids (percent moisture) values.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Hexavalent Chromium Quantitation by IC-ICP-DRC-MS All sample extracts for hexavalent chromium quantitation were analyzed via a modified version of EPA Method 7199 employing ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS). Aliquots of each sample are injected onto an anion exchange column and mobilized by an alkaline (pH > 7) gradient. The eluting chromium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with interfering ions of the same target mass to charge (m/z) ratios. A solid-state detector detects ions transmitted through the mass analyzer, on the basis of their mass-to-charge ratio (m/z), and the resulting current is processed by a data handling system.

The retention time for hexavalent chromium is compared to known standards for species identification.

Total Solids (Percent Moisture) Analysis Approximately 1-2 grams of each sample was placed into a pre-weighed pan, and the combined mass of the sample and pan was recorded. All samples were then placed into a convection oven maintained at a temperature of 65-70°C. After drying for a minimum of eight (8) hours, all samples

were briefly cooled and reweighed. The total solids percentage of each sample was calculated by dividing the weight of the dried sample by the weight of the original sample. All samples were prepared for total solids on April 22, 2010.

*pH Analysis* All sample extracts for pH measurement were analyzed in accordance with EPA Method 9045D on April 21, 2010.

*ORP Analysis* All sample extracts for ORP measurement were analyzed in accordance with ASTM D 1498-93 on April 21, 2010. All measured ORP values were corrected for the reference electrode in accordance with the guidance provided in EPA Method 3060A.

*TOC Analysis* All samples submitted for TOC measurements were analyzed via EPA Method 9060 on May 4, 2010.

#### **4. Analytical Issues**

Although the overall analyses went well, significant issues were encountered during the applied hexavalent chromium extraction procedure, as described below:

*Hexavalent Chromium Quantitation – LCS/CRM* Three laboratory control samples (LCS) and one certified reference material (CRM) were extracted with each batch of samples to identify the extraction efficiency and capacity of the extraction procedure to induce conversion of trivalent chromium to hexavalent chromium. The laboratory control samples spiked with an aqueous hexavalent chromium and a solid  $\text{PbCrO}_4$  standard produced acceptable recoveries for each batch (ranging from 77.8% to 98.0%), indicating that the applied method effectively extracts and stabilizes the hexavalent chromium species. Similarly, the results obtained for the NIST 2701 CRM extracted with each batch of samples were in close agreement with the informational value provided for Method 7199 in Table A2 of the certificate of analysis (recoveries ranging from 96.1% to 117.4%), suggesting acceptable method performance.

The laboratory control sample spiked with an aqueous trivalent chromium standard solution resulted in a hexavalent chromium recovery of less than 1% for each of the sample batches. The quantity of hexavalent chromium detected in these trivalent chromium laboratory control samples is near that present in the associated preparation blanks, which is attributed to trace levels of hexavalent chromium in the reagents used for the extraction procedure. The low recoveries for the trivalent chromium spikes demonstrate that the extraction procedure, under ideal conditions, induces minimal conversion of trivalent to hexavalent chromium.

*Hexavalent Chromium Quantitation – Matrix Spike / Matrix Spike Duplicates (MS/MSDs)* Similar to the laboratory control samples, three discrete sets of matrix spikes were extracted with each batch to identify the interaction of the sample matrix with trivalent and hexavalent chromium. The client also requested solid matrix

spikes be performed on specific samples using the NIST 2701 CRM. The performance of the matrix spikes can assist in identifying chemical interferences associated with the sample matrix and the applied extraction procedure.

Hexavalent Chromium Quantitation – Cr(III) Matrix Spikes The hexavalent chromium recoveries associated with each aqueous trivalent chromium MS and MSD performed for Batches C1 and C2 were less than 2%. These low trivalent chromium matrix spike recoveries confirm that the extraction procedure induces minimal oxidation of trivalent chromium to hexavalent chromium in the spiked sample matrices.

For Batch C3 the recoveries of the trivalent chromium MS/MSD were slightly elevated at 7.5% and 4.2% respectively. These recoveries suggest that partial oxidation of trivalent chromium to hexavalent chromium may have occurred in this spiked sample matrix during the extraction despite the application of the buffered  $\text{MgCl}_2$  solution to all extracts.

The recoveries of the trivalent chromium MS/MSD performed for Batch C4 were 3.9 and -4.7%, respectively. The fact that the concentrations of hexavalent chromium detected in the trivalent chromium MS and MSD (1.234 and 0.782mg/kg, respectively) were near the ambient sample concentration (1.025mg/kg average for the MD set performed on 1004736) must be carefully considered when applying these results.

The RPDs associated with the MSDs performed for batches C3 and C4 were above the established control limit of 25% (56.6% and 2064% respectively). These elevated RPDs are attributable to the fact that a minimal amount of the trivalent chromium spikes was converted to hexavalent chromium during the applied extraction procedure, resulting in hexavalent chromium concentrations that represented an increase in Cr(VI) less than twice the ambient sample concentration. Since greater variability is expected as spike concentrations approach the ambient sample concentrations, the elevated RPDs are identified as an inherent limitation of any quantitative method and do not impact the validity of the reported results.

Hexavalent Chromium Quantitation – Aqueous Cr(VI), Solid  $\text{PbCrO}_4$ , and NIST 2701 Matrix Spikes To assist in the interpretation of the data, the client requested that an aqueous Cr(VI) matrix spike be performed for most of the submitted samples. The recoveries associated with these aqueous Cr(VI) spikes were below the established control limit of 75% for the samples identified as 1004716-1004729, 1004731-1004736, and 1004739. The insoluble  $\text{PbCrO}_4$  matrix spikes performed on 1004716 and the NIST 2701 spikes performed on 1004729 and 1004739 recovered below 75% as well. As previously mentioned, the recoveries of the aqueous Cr(VI) LCS, the  $\text{PbCrO}_4$  LCS, and the NIST 2701 CRM were within control for all batches of samples, demonstrating that the applied procedure both extracts and stabilizes Cr(VI) in solution. Since the low bias observed for these soluble and insoluble Cr(VI) matrix spikes may therefore be attributed to interference from the spiked sample matrices, no

further corrective action was deemed necessary. These MS/MSD results suggest that the spiked sample matrices favor reduction of hexavalent chromium. The measured TOC and/or pH and ORP values obtained for these samples also suggest they are reducing in nature.

The hexavalent chromium recoveries associated with the aqueous Cr(VI) and the solid PbCrO<sub>4</sub> matrix spikes performed on the sample identified as 1004730 were within established control limits, as were those of the aqueous Cr(VI) and solid NIST 2701 matrix spikes performed on 1004742. These acceptable recoveries suggest that the applied method effectively extracts and stabilizes hexavalent chromium in these particular sample matrices.

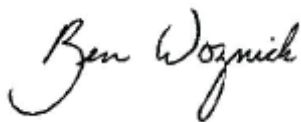
The RPD associated with the aqueous Cr(VI) MS/MSD set performed on the sample identified as 1004723 in Batch C2 was above the established control limit of 25% (65.4%). The RPD associated with the solid PbCrO<sub>4</sub> matrix spikes performed on this sample was within acceptance limits (3.4%), as was the RSD (5.7%) of the NIST 2701 triplicate matrix spike set performed on sample 1004729 in this same batch. Since this additional RPD and RSD were acceptable, the elevated RPD obtained for the aqueous Cr(VI) MS/MSD is deemed to be an isolated occurrence which reflects the variability of the reducing capacity of sample 1004723.

The RPD associated with the aqueous Cr(VI) MS/MSD set performed on the sample identified as 1004736 in Batch C4 was above the established control limit of 25% (182.9%). This sample matrix exhibited reducing conditions, as previously mentioned, which resulted in Cr(VI) concentrations for the MS and MSD that were less than twice the ambient sample concentration. Since greater variability is expected as spike concentrations approach the ambient sample concentration, the elevated RPD is identified as an inherent limitation of any quantitative method and does not impact the validity of the reported results. The acceptable RPD obtained for solid PbCrO<sub>4</sub> matrix spike performed on 1004736 instead demonstrates the precision of the extraction and analysis.

The estimated method detection limit (eMDL) for hexavalent chromium for each batch of solids is generated using the standard deviation of the associated preparation blanks, in accordance with Applied Speciation and Consulting's SOP.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is written in a cursive, flowing style.

Ben Wozniak  
Project Manager  
Applied Speciation and Consulting, LLC

Hexavalent Cr & Conventional Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

Date: May 11, 2010  
Report Generated by: Ben Wozniak  
Applied Speciation and Consulting, LLC

**Sample Results**

| Sample ID | Batch Identifiers | Date & Time Analyzed for Cr(VI)* | Cr(VI) in mg/kg (dw) | % Solids | TOC in % | ORP (mV)** | pH   |
|-----------|-------------------|----------------------------------|----------------------|----------|----------|------------|------|
| 1004716   | S1, C1, T1        | 4/23/2010 21:00                  | 0.060                | 95.6     | 3.1      | 442        | 6.52 |
| 1004717   | S1, C1, T1        | 4/23/2010 20:31                  | 0.178                | 96.2     | 1.2      | 460        | 6.03 |
| 1004718   | S1, C1, T1        | 4/23/2010 22:12                  | 0.132                | 95.7     | 2.3      | 456        | 6.31 |
| 1004719   | S1, C1, T1        | 4/23/2010 22:27                  | 0.083                | 93.6     | 2.1      | 470        | 6.47 |
| 1004720   | S1, C1, T1        | 4/23/2010 22:41                  | 0.039                | 93.3     | 3.7      | 482        | 6.19 |
| 1004721   | S1, C1, T1        | 4/23/2010 23:32                  | 0.053                | 92.4     | 3.9      | 454        | 7.03 |
| 1004722   | S1, C1, T1        | 4/23/2010 23:47                  | 0.110                | 92.9     | 2.4      | 464        | 6.49 |

dw = dry weight

\* Times reported in CST

\*\* ORP measurements corrected for reference electrode as specified in EPA Method 3060A

NR = Not requested

U = Sample concentration is less than the estimated Method Detection Limit (eMDL)

J = Sample concentration is between the eMDL and the Reporting Limit (RL)



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|-----------|-------------------|----------------------------------|----------------------|----------|----------|------------|------|
| 1004723   | S1, C2, T1        | 4/21/2010 22:52                  | 0.020 J              | 95.9     | 3.7      | 433        | 7.15 |
| 1004724   | S1, C2, T1        | 4/21/2010 22:23                  | 0.029                | 95.8     | 5.2      | 416        | 7.78 |
| 1004725   | S1, C2, T1        | 4/22/2010 0:04                   | 0.233                | 92.4     | 3.2      | 431        | 7.54 |
| 1004726   | S1, C2, T1        | 4/22/2010 0:19                   | 0.096                | 93.0     | 2.0      | 436        | 7.47 |
| 1004727   | S1, C2, T1        | 4/22/2010 0:33                   | 0.049                | 97.8     | 1.8      | 430        | 7.72 |
| 1004728   | S1, C2, T1        | 4/22/2010 0:48                   | 0.148                | 93.5     | 2.3      | 435        | 7.25 |
| 1004729   | S1, C2, T1        | 4/22/2010 1:39                   | 0.073                | 88.1     | 3.1      | 444        | 7.25 |

dw = dry weight

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**Sample Results**

| Sample ID | Batch Identifiers | Date & Time Analyzed for Cr(VI)* | Cr(VI) in mg/kg (dw) | % Solids | TOC in % | ORP (mV)** | pH   |
|-----------|-------------------|----------------------------------|----------------------|----------|----------|------------|------|
| 1004730   | S1, C3, T1        | 4/22/2010 16:56                  | 0.325                | 93.9     | 1.4      | 443        | 7.14 |
| 1004731   | S2, C3, T1        | 4/22/2010 16:11                  | 0.153                | 93.5     | 2.3      | 441        | 7.55 |
| 1004732   | S2, C3, T1        | 4/22/2010 16:41                  | 0.086                | 95.0     | 1.4      | 451        | 7.54 |
| 1004733   | S2, C3, T1        | 4/22/2010 18:08                  | 0.034                | 97.2     | 3.4      | 450        | 7.41 |
| 1004734   | S2, C3, T1        | 4/22/2010 18:23                  | 0.050                | 97.6     | 2.2      | 442        | 7.90 |
| 1004735   | S2, C3, T1        | 4/22/2010 18:37                  | 0.095                | 93.2     | 2.2      | 440        | 7.00 |

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**Sample Results**

| Sample ID | Batch Identifiers | Date & Time Analyzed for Cr(VI)* | Cr(VI) in mg/kg (dw) | % Solids | TOC in % | ORP (mV)** | pH   |
|-----------|-------------------|----------------------------------|----------------------|----------|----------|------------|------|
| 1004736   | S2, C4, T2        | 4/21/2010 18:02                  | 1.11                 | 92.5     | 3.0      | 467        | 6.57 |
| 1004737   | S2, C4            | 4/21/2010 17:33                  | 0.652                | 93.5     | NR       | NR         | NR   |
| 1004738   | S2, C4            | 4/21/2010 17:40                  | 0.779                | 93.0     | NR       | NR         | NR   |
| 1004739   | S2, C4, T2        | 4/21/2010 19:14                  | 1.13                 | 96.2     | 5.8      | 413        | 7.89 |
| 1004740   | S2, C4            | 4/21/2010 19:36                  | 0.715                | 90.8     | NR       | NR         | NR   |
| 1004741   | S2, C4            | 4/21/2010 19:43                  | 0.674                | 96.1     | NR       | NR         | NR   |
| 1004742   | S2, C4, T2        | 4/21/2010 19:51                  | 3.45                 | 97.1     | 2.1      | 425        | 7.58 |
| 1004743   | S2, C4            | 4/21/2010 20:27                  | 4.57                 | 96.2     | NR       | NR         | NR   |
| 1004744   | S2, C4            | 4/21/2010 20:34                  | 4.38                 | 92.9     | NR       | NR         | NR   |
| 1004745   | S2, C4            | 4/21/2010 20:41                  | 3.76                 | 92.9     | NR       | NR         | NR   |

dw = dry weight

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**Quality Control Summary - Preparation Blank Summary**

| Analyte | Units      | Batch | PBS1   | PBS2  | PBS3  | PBS4  | Mean  | StdDev | eMDL  | RL    |
|---------|------------|-------|--------|-------|-------|-------|-------|--------|-------|-------|
| TOC     | %          | T1    | < 0.05 | -     | -     | -     | -     | -      | -     | 0.05  |
| TOC     | %          | T2    | < 0.05 | -     | -     | -     | -     | -      | -     | 0.05  |
| Cr(VI)  | mg/kg (dw) | C1    | 0.009  | 0.006 | 0.011 | 0.007 | 0.009 | 0.002  | 0.007 | 0.025 |
| Cr(VI)  | mg/kg (dw) | C2    | 0.010  | 0.009 | 0.010 | 0.010 | 0.010 | 0.001  | 0.002 | 0.025 |
| Cr(VI)  | mg/kg (dw) | C3    | 0.011  | 0.005 | 0.010 | 0.014 | 0.010 | 0.003  | 0.010 | 0.025 |
| Cr(VI)  | mg/kg (dw) | C4    | 0.006  | 0.006 | 0.007 | 0.008 | 0.007 | 0.001  | 0.003 | 0.025 |

eMDL = Estimated Method Detection Limit

RL = Reporting Limit

Hexavalent Cr & Conventionals Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

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**Quality Control Summary - Laboratory Control Samples**

| Analyte            | Units      | Batch | LCS        | True Value | Result | Recovery |
|--------------------|------------|-------|------------|------------|--------|----------|
| TOC                | %          | T1    | LCS        | 1.2        | 1.1    | 91.7     |
| TOC                | %          | T2    | LCS        | 1.2        | 1.1    | 91.7     |
| Cr(III)            | mg/kg (dw) | C1    | LCS        | 5.000      | 0.009  | 0.2      |
| Cr(VI)             | mg/kg (dw) | C1    | LCS        | 5.000      | 4.157  | 83.1     |
| PbCrO <sub>4</sub> | mg/kg (dw) | C1    | LCS        | 6371       | 4957   | 77.8     |
| Cr(VI)             | mg/kg (dw) | C1    | NIST 2701* | 388.7      | 373.6  | 96.1     |
| Cr(III)            | mg/kg (dw) | C2    | LCS        | 5.000      | 0.010  | 0.2      |
| Cr(VI)             | mg/kg (dw) | C2    | LCS        | 5.000      | 4.900  | 98.0     |
| PbCrO <sub>4</sub> | mg/kg (dw) | C2    | LCS        | 5566       | 5050   | 90.7     |
| Cr(VI)             | mg/kg (dw) | C2    | NIST 2701* | 388.7      | 456.1  | 117.4    |
| Cr(III)            | mg/kg (dw) | C3    | LCS        | 5.000      | 0.007  | 0.1      |
| Cr(VI)             | mg/kg (dw) | C3    | LCS        | 5.000      | 4.507  | 90.1     |
| PbCrO <sub>4</sub> | mg/kg (dw) | C3    | LCS        | 6532       | 5844   | 89.5     |
| Cr(VI)             | mg/kg (dw) | C3    | NIST 2701* | 388.7      | 398.9  | 102.6    |
| Cr(III)            | mg/kg (dw) | C4    | LCS        | 5.000      | 0.008  | 0.2      |
| Cr(VI)             | mg/kg (dw) | C4    | LCS        | 5.000      | 4.756  | 95.1     |
| PbCrO <sub>4</sub> | mg/kg (dw) | C4    | LCS        | 6596       | 5866   | 88.9     |
| Cr(VI)             | mg/kg (dw) | C4    | NIST 2701* | 388.7      | 428.1  | 110.1    |

\* True value listed is the mean value for Method 7199 in Table A2 of the NIST 2701 CoA

Hexavalent Cr & Conventional Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

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**Quality Control Summary - Matrix Duplicate / Triplicate**

| Analyte | Units | Batch | Sample ID | Rep 1 | Rep 2 | Rep 3 | Mean | RSD  |
|---------|-------|-------|-----------|-------|-------|-------|------|------|
| TOC     | %     | T1    | 1004716   | 3.1   | 3.1   | 3.1   | 3.1  | 0.0  |
| TOC     | %     | T1    | 1004735   | 2.2   | 2.4   | 1.7   | 2.1  | 17.2 |
| TOC     | %     | T2    | 1004739   | 5.8   | 6.8   | 5.7   | 6.1  | 10.0 |

**Quality Control Summary - Matrix Duplicate**

| Analyte  | Units      | Batch | Sample ID | Rep 1   | Rep 2   | Mean    | RPD  |
|----------|------------|-------|-----------|---------|---------|---------|------|
| % Solids | %          | S1    | 1004716   | 95.58   | 95.59   | 95.58   | 0.0  |
| % Solids | %          | S2    | 1004731   | 93.51   | 93.13   | 93.32   | 0.4  |
| Cr(VI)   | mg/kg (dw) | C1    | 1004716   | 0.060   | 0.063   | 0.061   | 5.1  |
| Cr(VI)   | mg/kg (dw) | C2    | 1004723   | 0.020 J | 0.022 J | 0.021 J | 9.2  |
| Cr(VI)   | mg/kg (dw) | C3    | 1004730   | 0.325   | 0.312   | 0.318   | 4.1  |
| Cr(VI)   | mg/kg (dw) | C4    | 1004736   | 1.112   | 0.938   | 1.025   | 17.0 |



Hexavalent Cr & Conventionals Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

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**Quality Control Summary - Matrix Spike / Matrix Spike Duplicate**

| Analyte            | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery | Spike Conc | MSD<br>Result | Recovery | RPD  |
|--------------------|------------|-------|-----------|------------|-----------|----------|------------|---------------|----------|------|
| Cr(III)            | mg/kg (dw) | C1    | 1004716   | 5.125      | 0.116     | 1.1      | 5.295      | 0.108         | 0.9      | 18.1 |
| Cr(VI)             | mg/kg (dw) | C1    | 1004716   | 5.094      | 0.411     | 6.9*     | 5.220      | 0.440         | 7.3*     | 5.5  |
| PbCrO <sub>4</sub> | mg/kg (dw) | C1    | 1004716   | 7890       | 5569      | 70.6*    | 7250       | 5118          | 70.6*    | 0.0  |
| Cr(VI)             | mg/kg (dw) | C1    | 1004717   | 5.102      | 3.364     | 62.4*    | -          | -             | -        | -    |
| Cr(VI)             | mg/kg (dw) | C1    | 1004718   | 5.169      | 2.992     | 55.3*    | -          | -             | -        | -    |
| Cr(VI)             | mg/kg (dw) | C1    | 1004719   | 5.388      | 3.547     | 64.3*    | -          | -             | -        | -    |
| Cr(VI)             | mg/kg (dw) | C1    | 1004720   | 5.377      | 0.173     | 2.5*     | -          | -             | -        | -    |
| Cr(VI)             | mg/kg (dw) | C1    | 1004721   | 5.472      | 0.421     | 6.7*     | -          | -             | -        | -    |
| Cr(VI)             | mg/kg (dw) | C1    | 1004722   | 5.355      | 2.818     | 50.6*    | -          | -             | -        | -    |

\* The recovery is below the established control limit of 75%; please see narrative.

\*\* The RPD is above the established control limit of 25%; please see narrative.

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**Quality Control Summary - Matrix Spike / Matrix Spike Duplicate**

| Analyte            | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery | Spike Conc | MSD Result | Recovery | RPD    |
|--------------------|------------|-------|-----------|------------|-----------|----------|------------|------------|----------|--------|
| Cr(III)            | mg/kg (dw) | C2    | 1004723   | 5.183      | 0.048     | 0.5      | 5.185      | 0.045      | 0.5      | 13.1   |
| Cr(VI)             | mg/kg (dw) | C2    | 1004723   | 5.227      | 0.673     | 12.5*    | 5.182      | 1.296      | 24.6*    | 65.4** |
| PbCrO <sub>4</sub> | mg/kg (dw) | C2    | 1004723   | 6214       | 4910      | 79.0     | 5957       | 4547       | 76.3     | 3.4    |
| Cr(VI)             | mg/kg (dw) | C2    | 1004724   | 5.148      | 0.525     | 9.6*     | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C2    | 1004725   | 5.147      | 2.691     | 47.8*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C2    | 1004726   | 5.324      | 2.871     | 52.1*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C2    | 1004727   | 5.098      | 0.298     | 4.9*     | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C2    | 1004728   | 5.193      | 1.680     | 29.5*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C2    | 1004729   | 5.714      | 3.205     | 54.8*    | -          | -          | -        | -      |

\* The recovery is below the established control limit of 75%; please see narrative.

\*\* The RPD is above the established control limit of 25%; please see narrative.

**Quality Control Summary - NIST 2701 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Triplicate**

| Analyte | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery | RSD |
|---------|------------|-------|-----------|------------|-----------|----------|-----|
| Cr(VI)  | mg/kg (dw) | C2    | 1004729   | 18.70      | 10.00     | 53.1*    | 5.7 |
| Cr(VI)  | mg/kg (dw) | C2    | 1004729   | 16.61      | 8.615     | 51.4*    | -   |
| Cr(VI)  | mg/kg (dw) | C2    | 1004729   | 21.10      | 12.18     | 57.4*    | -   |

\* The recovery is below the established control limit of 75%; please see narrative.

**Note:** True value for the matrix spike calculated using the mean value for Method 7199 in Table A2 of the NIST 2701 CoA

Hexavalent Cr & Conventionals Results for the Missouri Department of Natural Resources  
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**Quality Control Summary - Matrix Spike / Matrix Spike Duplicate**

| Analyte            | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery | Spike Conc | MSD Result | Recovery | RPD    |
|--------------------|------------|-------|-----------|------------|-----------|----------|------------|------------|----------|--------|
| Cr(III)            | mg/kg (dw) | C3    | 1004730   | 5.370      | 0.722     | 7.5      | 5.274      | 0.540      | 4.2      | 56.6** |
| Cr(VI)             | mg/kg (dw) | C3    | 1004730   | 5.306      | 4.633     | 81.3     | 5.189      | 4.710      | 84.6     | 4.0    |
| PbCrO <sub>4</sub> | mg/kg (dw) | C3    | 1004730   | 7300       | 6136      | 84.1     | 7193       | 6206       | 86.3     | 2.6    |
| Cr(VI)             | mg/kg (dw) | C3    | 1004731   | 5.291      | 4.079     | 74.2*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C3    | 1004732   | 5.375      | 3.571     | 64.8*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C3    | 1004733   | 4.979      | 0.236     | 4.1*     | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C3    | 1004734   | 5.073      | 2.269     | 43.7*    | -          | -          | -        | -      |
| Cr(VI)             | mg/kg (dw) | C3    | 1004735   | 5.335      | 2.765     | 50.0*    | -          | -          | -        | -      |

\* The recovery is below the established control limit of 75%; please see narrative.

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**Quality Control Summary - Matrix Spike / Matrix Spike Duplicate**

| Analyte            | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery | Spike Conc | MSD Result | Recovery | RPD     |
|--------------------|------------|-------|-----------|------------|-----------|----------|------------|------------|----------|---------|
| Cr(III)            | mg/kg (dw) | C4    | 1004736   | 5.427      | 1.234     | 3.9      | 5.191      | 0.782      | -4.7     | 2064**  |
| Cr(VI)             | mg/kg (dw) | C4    | 1004736   | 5.391      | 0.828     | -3.6*    | 5.374      | 1.016      | -0.2*    | 182.9** |
| PbCrO <sub>4</sub> | mg/kg (dw) | C4    | 1004736   | 6857       | 5257      | 76.6     | 6969       | 5258       | 75.4     | 1.6     |
| Cr(VI)             | mg/kg (dw) | C4    | 1004739   | 5.110      | 1.050     | -1.6*    | -          | -          | -        | -       |
| Cr(VI)             | mg/kg (dw) | C4    | 1004742   | 5.122      | 8.149     | 91.8     | -          | -          | -        | -       |

\* The recovery is below the established control limit of 75%; please see narrative.

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**Quality Control Summary - NIST 2701 Matrix Spike**

| Analyte | Units      | Batch | Sample ID | Spike Conc | MS Result | Recovery |
|---------|------------|-------|-----------|------------|-----------|----------|
| Cr(VI)  | mg/kg (dw) | C4    | 1004739   | 15.39      | 1.221     | 0.6*     |
| Cr(VI)  | mg/kg (dw) | C4    | 1004742   | 17.57      | 17.45     | 79.7     |

\* The recovery is below the established control limit of 75%; please see narrative.

**Note:** True value for the matrix spike calculated using the mean value for Method 7199 in Table A2 of the NIST 2701 CoA

Hexavalent Cr Results for the Missouri Department of Natural Resources  
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**Quality Control Summary - Historical Calibration Standards**

| <b>Cr(VI) True<br/>Value</b> | <b>Cr(VI) Measured<br/>Result</b> | <b>Percent<br/>Recovery</b> |
|------------------------------|-----------------------------------|-----------------------------|
| 0.050                        | 0.051                             | 102.9                       |
| 0.050                        | 0.054                             | 107.6                       |
| 0.050                        | 0.064                             | 127.3                       |
| 0.050                        | 0.061                             | 121.9                       |
| 0.500                        | 0.507                             | 101.3                       |
| 5.000                        | 5.039                             | 100.8                       |
| 25.00                        | 25.03                             | 100.1                       |
| 0.050                        | 0.054                             | 108.9                       |
| 0.050                        | 0.055                             | 109.7                       |
| 0.050                        | 0.059                             | 118.0                       |
| 0.050                        | 0.056                             | 112.0                       |
| 0.500                        | 0.506                             | 101.1                       |
| 5.000                        | 5.091                             | 101.8                       |
| 25.00                        | 24.96                             | 99.8                        |
| 0.050                        | 0.057                             | 113.5                       |
| 0.050                        | 0.061                             | 122.8                       |
| 0.050                        | 0.069                             | 138.0                       |
| 0.050                        | 0.063                             | 125.4                       |
| 0.500                        | 0.537                             | 107.4                       |
| 5.000                        | 5.111                             | 102.2                       |
| 25.00                        | 24.97                             | 99.9                        |

All results are reported in µg/L

Hexavalent Cr Results for the Missouri Department of Natural Resources  
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***Quality Control Summary - Historical CCV Standards***

| <b>Cr(VI) True<br/>Value</b> | <b>Cr(VI) Measured<br/>Result</b> | <b>Percent<br/>Recovery</b> |
|------------------------------|-----------------------------------|-----------------------------|
| 5.000                        | 4.660                             | 93.2                        |
| 5.000                        | 5.049                             | 101.0                       |
| 5.000                        | 5.079                             | 101.6                       |
| 5.000                        | 5.254                             | 105.1                       |
| 5.000                        | 5.259                             | 105.2                       |
| 5.000                        | 5.021                             | 100.4                       |
| 5.000                        | 5.312                             | 106.2                       |
| 5.000                        | 5.175                             | 103.5                       |
| 5.000                        | 5.242                             | 104.8                       |
| 5.000                        | 5.102                             | 102.0                       |
| 5.000                        | 5.159                             | 103.2                       |
| 5.000                        | 4.568                             | 91.4                        |
| 5.000                        | 4.899                             | 98.0                        |
| 5.000                        | 4.881                             | 97.6                        |
| 5.000                        | 4.848                             | 97.0                        |
| 5.000                        | 4.968                             | 99.4                        |
| 5.000                        | 4.914                             | 98.3                        |
| 5.000                        | 4.947                             | 98.9                        |
| 5.000                        | 4.845                             | 96.9                        |
| 5.000                        | 5.030                             | 100.6                       |

CCV = Continuing Calibration Verification

All results are reported in µg/L



Hexavalent Cr Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

Date: May 11, 2010  
Report Generated by: Ben Wozniak  
Applied Speciation and Consulting, LLC

**Quality Control Summary - Historical Second Source Standards**

| <b>Cr(VI) True<br/>Value</b> | <b>Cr(VI) Measured<br/>Result</b> | <b>Percent<br/>Recovery</b> |
|------------------------------|-----------------------------------|-----------------------------|
| 5.000                        | 5.495                             | 109.9                       |
| 5.000                        | 5.107                             | 102.1                       |
| 100.0                        | 95.38                             | 95.4                        |
| 5.000                        | 4.932                             | 98.6                        |
| 5.000                        | 4.706                             | 94.1                        |
| 20.00                        | 20.30                             | 101.5                       |
| 5.000                        | 5.029                             | 100.6                       |
| 100.0                        | 107.2                             | 107.2                       |
| 5.000                        | 5.369                             | 107.4                       |
| 5.000                        | 5.557                             | 111.1                       |
| 5.000                        | 4.986                             | 99.7                        |
| 5.000                        | 5.474                             | 109.5                       |
| 5.000                        | 5.445                             | 108.9                       |
| 5.000                        | 4.546                             | 90.9                        |
| 5.000                        | 4.900                             | 98.0                        |
| 5.000                        | 4.756                             | 95.1                        |
| 5.000                        | 4.507                             | 90.1                        |
| 5.000                        | 4.157                             | 83.1                        |

Second source standard = Cr(VI) Blank Spike (from 3060A Extraction)

All results are reported in mg/kg

Hexavalent Cr Results for the Missouri Department of Natural Resources  
Contact: Michael Stroh

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**Quality Control Summary - Historical Matrix Spikes**

| Ambient<br>Cr(VI) Conc. | MS Spike<br>Conc. | MS                 | MS<br>Recovery | MSD Spike<br>Conc. | MSD                | MSD<br>Recovery | RPD   |
|-------------------------|-------------------|--------------------|----------------|--------------------|--------------------|-----------------|-------|
|                         |                   | Measured<br>Result |                |                    | Measured<br>Result |                 |       |
| 0.061                   | 5.094             | 0.411              | 6.9            | 5.220              | 0.440              | 7.3             | 5.5   |
| 0.178                   | 5.102             | 3.364              | 62.4           | -                  | -                  | -               | -     |
| 0.132                   | 5.169             | 2.992              | 55.3           | -                  | -                  | -               | -     |
| 0.083                   | 5.388             | 3.547              | 64.3           | -                  | -                  | -               | -     |
| 0.039                   | 5.377             | 0.173              | 2.5            | -                  | -                  | -               | -     |
| 0.053                   | 5.472             | 0.421              | 6.7            | -                  | -                  | -               | -     |
| 0.110                   | 5.355             | 2.818              | 50.6           | -                  | -                  | -               | -     |
| 0.021                   | 5.227             | 0.673              | 12.5           | 5.182              | 1.296              | 24.6            | 65.4  |
| 0.029                   | 5.148             | 0.525              | 9.6            | -                  | -                  | -               | -     |
| 0.233                   | 5.147             | 2.691              | 47.8           | -                  | -                  | -               | -     |
| 0.096                   | 5.324             | 2.871              | 52.1           | -                  | -                  | -               | -     |
| 0.049                   | 5.098             | 0.298              | 4.9            | -                  | -                  | -               | -     |
| 0.148                   | 5.193             | 1.680              | 29.5           | -                  | -                  | -               | -     |
| 0.073                   | 5.714             | 3.205              | 54.8           | -                  | -                  | -               | -     |
| 0.318                   | 5.306             | 4.633              | 81.3           | 5.189              | 4.710              | 84.6            | 4.0   |
| 0.153                   | 5.291             | 4.079              | 74.2           | -                  | -                  | -               | -     |
| 0.086                   | 5.375             | 3.571              | 64.8           | -                  | -                  | -               | -     |
| 0.034                   | 4.979             | 0.236              | 4.1            | -                  | -                  | -               | -     |
| 0.050                   | 5.073             | 2.269              | 43.7           | -                  | -                  | -               | -     |
| 0.095                   | 5.335             | 2.765              | 50.0           | -                  | -                  | -               | -     |
| 1.025                   | 5.391             | 0.828              | -3.6           | 5.374              | 1.016              | -0.2            | 182.9 |
| 1.131                   | 5.110             | 1.050              | -1.6           | -                  | -                  | -               | -     |
| 3.448                   | 5.122             | 8.149              | 91.8           | -                  | -                  | -               | -     |

All results are reported in mg/kg



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: \_\_\_\_\_

| <b>Collector's Name:</b> Transfer COC to Applied Speciation and Consulting, LLC<br><small>(Please Print)</small>            |                  |  |      |    |             |       |        | <b>Description of Shipment</b><br><input checked="" type="checkbox"/> Shipped-Carrier: Next Day Air<br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |         |                  |         |                                |           |
|---|------------------|--|------|----|-------------|-------|--------|---|---------|------------------|---------|--------------------------------|-----------|
| <b>Affiliation:</b> ESP    KCRO    NERO    SERO    SLRO    SWRO    WPP<br><small>(circle one)</small> DGLS    HWP    Other: |                  |  |      |    |             |       |        | No. Of Containers: 4  |         |                  |         |                                |           |
| Sample Number   | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | Matrix  | For Lab Use Only |         | Container                      | Preserved |
| 1004716<br><b>(Sample A)</b>  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water   | 1L amber         | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |           |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil    | Cubitainer       |         | HNO <sub>3</sub>               |           |
| For Lab Use Only  | Time: 950        | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic | 2 oz glass       | Nalgene | NAOH                           |           |
|   |                  |  |      |    |             |       |        |   | Sludge  | 8 oz glass       | 1L      | HCL                            |           |
|   |                  |  |      |    |             |       |        |   | Other:  | VOA vial         | 500mL   | 4° C(None)                     |           |
|   |                  |  |      |    |             |       |        |   |         | Encore           | 250mL   | Disinfected                    |           |
|   |                  |  |      |    |             |       |        |   |         | Other:           |         | Other                          |           |
| 1004717<br><b>(Sample B)</b>  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water   | 1L amber         | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |           |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil    | Cubitainer       |         | HNO <sub>3</sub>               |           |
| For Lab Use Only  | Time: 1518       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic | 2 oz glass       | Nalgene | NAOH                           |           |
|   |                  |  |      |    |             |       |        |   | Sludge  | 8 oz glass       | 1L      | HCL                            |           |
|   |                  |  |      |    |             |       |        |   | Other:  | VOA vial         | 500mL   | 4° C(None)                     |           |
|   |                  |  |      |    |             |       |        |   |         | Encore           | 250mL   | Disinfected                    |           |
|   |                  |  |      |    |             |       |        |   |         | Other:           |         | Other                          |           |
| 1004718<br><b>(Sample C)</b>  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water   | 1L amber         | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |           |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil    | Cubitainer       |         | HNO <sub>3</sub>               |           |
| For Lab Use Only  | Time: 1620       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic | 2 oz glass       | Nalgene | NAOH                           |           |
|   |                  |  |      |    |             |       |        |   | Sludge  | 8 oz glass       | 1L      | HCL                            |           |
|   |                  |  |      |    |             |       |        |   | Other:  | VOA vial         | 500mL   | 4° C(None)                     |           |
|   |                  |  |      |    |             |       |        |   |         | Encore           | 250mL   | Disinfected                    |           |
|   |                  |  |      |    |             |       |        |   |         | Other:           |         | Other                          |           |
| 1004719<br><b>(Sample D)</b>  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water   | 1L amber         | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |           |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil    | Cubitainer       |         | HNO <sub>3</sub>               |           |
| For Lab Use Only  | Time: 1617       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic | 2 oz glass       | Nalgene | NAOH                           |           |
|   |                  |  |      |    |             |       |        |   | Sludge  | 8 oz glass       | 1L      | HCL                            |           |
|   |                  |  |      |    |             |       |        |   | Other:  | VOA vial         | 500mL   | 4° C(None)                     |           |
|   |                  |  |      |    |             |       |        |   |         | Encore           | 250mL   | Disinfected                    |           |
|   |                  |  |      |    |             |       |        |   |         | Other:           |         | Other                          |           |
| Relinquished By: <i>[Signature]</i> 4/14/10   |                  | Received By: <i>[Signature]</i> -4°C   |      |    |             |       |        | Date: 4/15/10   |         | Time: 1732       |         |                                |           |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:   |         | Time:            |         |                                |           |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:   |         | Time:            |         |                                |           |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID:

| Collector's Name: <b>Transfer COC to Applied Speciation and Consulting, LLC</b> |                  |  |      |    |             |       |        | Description of Shipment                |                  |            |         |                                |
|---|------------------|--|------|----|-------------|-------|--------|--|------------------|------------|---------|--------------------------------|
| (Please Print)  |                  |  |      |    |             |       |        | x Shipped-Carrier: <b>Next Day Air</b> |                  |            |         |                                |
| Affiliation: <b>ESP KCRO NERO SERO SIRO SWRO WPP</b>                            |                  |  |      |    |             |       |        | x Tape sealed and initialed            |                  |            |         |                                |
| (circle one) <b>DGLS HWP Other:</b>   |                  |  |      |    |             |       |        | Hand Delivered                         |                  |            |         |                                |
|   |                  |  |      |    |             |       |        | No. Of Containers: <b>4</b>            |                  |            |         |                                |
| Sample Number   | Sample Collected | Analyses   |      |    |             |       |        | Sample Type                            | For Lab Use Only |            |         |                                |
|   |                  |  |      |    |             |       |        | Matrix                                 | Container        | Preserved  |         |                                |
| 1004720<br>(Sample A)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab                                   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | x Composite                            | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1239       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified                               | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        | Other:                                 | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| 1004721<br>(Sample B)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab                                   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | x Composite                            | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 941        | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified                               | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        | Other:                                 | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| 1004722<br>(Sample C)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab                                   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | x Composite                            | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1430       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified                               | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        | Other:                                 | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| 1004723<br>(Sample D)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab                                   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | x Composite                            | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1227       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified                               | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        | Other:                                 | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| Relinquished By: <i>Joni Punmie</i> 4/14/16                                     |                  | Received By: <i>Angela Kern</i> -4°C   |      |    |             |       |        | Date: 4/15/10                          |                  | Time: 1732 |         |                                |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:                                  |                  | Time:      |         |                                |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:                                  |                  | Time:      |         |                                |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: \_\_\_\_\_

| Collector's Name: <b>Transfer COC to Applied Speciation and Consulting, LLC</b><br>(Please Print) |                  |  |      |    |             |       |        | Description of Shipment  |                  |            |         |                                |
|---|------------------|--|------|----|-------------|-------|--------|--|------------------|------------|---------|--------------------------------|
| Affiliation: <b>ESP KCRO NERO SERO SLRO SWRO WPP</b><br>(circle one) <b>DGLS HWP Other:</b>       |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Shipped-Carrier: <b>Next Day Air</b><br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |                  |            |         |                                |
|   |                  |  |      |    |             |       |        | No. Of Containers: <b>4</b>  |                  |            |         |                                |
| Sample Number   | Sample Collected | Analyses   |      |    |             |       |        | Sample Type  | For Lab Use Only |            |         |                                |
|   |                  |  |      |    |             |       |        |  | Matrix           | Container  |         | Preserved                      |
| ● 1004724<br>(Sample A)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1255       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 1 4° C(None)                   |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| ● 1004725<br>(Sample B)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1316       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 1 4° C(None)                   |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| ● 1004726<br>(Sample C)   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 1306       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 1 4° C(None)                   |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| ● 1004727<br>(Sample D)   | Date: 04/07/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|   |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only  | Time: 818        | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |
|   |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |
|   |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 1 4° C(None)                   |
|   |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |
|   |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |
| Relinquished By: <i>Lori Purmire</i> 4/14/10  |                  | Received By: <i>Ashten</i> -4°C  |      |    |             |       |        | Date: 4/15/10  |                  | Time: 1732 |         |                                |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:  |                  | Time:      |         |                                |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:  |                  | Time:      |         |                                |



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: \_\_\_\_\_

| Collector's Name: <b>Transfer COC to Applied Speciation and Consulting, LLC</b><br><small>(Please Print)</small> |                  |  |      |    |             |       |        | Description of Shipment  |                  |            |         |                                |            |
|--|------------------|--|------|----|-------------|-------|--------|--|------------------|------------|---------|--------------------------------|------------|
| Affiliation: <b>ESP KCRO NERO SERO SLRO SWRO WPP</b><br><small>(circle one)</small> <b>DGLS HWP Other:</b>       |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Shipped-Carrier: <b>Next Day Air</b><br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |                  |            |         |                                |            |
|  |                  |  |      |    |             |       |        | No. Of Containers: <b>4</b>  |                  |            |         |                                |            |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       |        | Sample Type  | For Lab Use Only |            |         |                                |            |
|  |                  |  |      |    |             |       |        |  | Matrix           | Container  |         | Preserved                      |            |
| 1004728<br><b>(Sample A)</b>   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time: 1415       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |            |
| 1004729<br><b>(Sample B)</b>   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time: 1350       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |            |
| 1004730<br><b>(Sample C)</b>   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time: 1407       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |            |
| 1004731<br><b>(Sample D)</b>   | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab   | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite  | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time: 1510       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |  | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |  | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |  |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |  |                  | Other:     |         | Other                          |            |
| Relinquished By: <i>Jeri Cummins</i> 4/14/10   |                  |  |      |    |             |       |        | Received By: <i>Anfaken</i> -4°C   |                  |            |         | Date: 4/15/10                  | Time: 1732 |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:   |                  |            |         | Date:                          | Time:      |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:   |                  |            |         | Date:                          | Time:      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID:

| Collector's Name: Transfer COC to Applied Speciation and Consulting, LLC<br>(Please Print) |                  |  |      |    |             |       |        | Description of Shipment   |                  |            |           |                                |  |            |  |
|--|------------------|--|------|----|-------------|-------|--------|---|------------------|------------|-----------|--------------------------------|--|------------|--|
| Affiliation: ESP KCRO NERO SERO SLRO SWRO WPP<br>(circle one) DGLS HWP Other:              |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Shipped-Carrier: Next Day Air<br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |                  |            |           |                                |  |            |  |
|  |                  |  |      |    |             |       |        | No. Of Containers: 4  |                  |            |           |                                |  |            |  |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | For Lab Use Only |            |           |                                |  |            |  |
|  |                  |  |      |    |             |       |        |   | Matrix           | Container  | Preserved |                                |  |            |  |
| 1004732<br>(Sample A)  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL    | H <sub>2</sub> SO <sub>4</sub> |  |            |  |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |           | HNO <sub>3</sub>               |  |            |  |
| For Lab Use Only   | Time: 1516       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene   | NAOH                           |  |            |  |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L        | HCL                            |  |            |  |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL     | 4° C(None)                     |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL     | Disinfected                    |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |           | Other                          |  |            |  |
| 1004733<br>(Sample B)  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL    | H <sub>2</sub> SO <sub>4</sub> |  |            |  |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |           | HNO <sub>3</sub>               |  |            |  |
| For Lab Use Only   | Time: 1520       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene   | NAOH                           |  |            |  |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L        | HCL                            |  |            |  |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL     | 4° C(None)                     |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL     | Disinfected                    |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |           | Other                          |  |            |  |
| 1004734<br>(Sample C)  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL    | H <sub>2</sub> SO <sub>4</sub> |  |            |  |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |           | HNO <sub>3</sub>               |  |            |  |
| For Lab Use Only   | Time: 1753       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene   | NAOH                           |  |            |  |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L        | HCL                            |  |            |  |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL     | 4° C(None)                     |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL     | Disinfected                    |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |           | Other                          |  |            |  |
| 1004735<br>(Sample D)  | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL    | H <sub>2</sub> SO <sub>4</sub> |  |            |  |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |           | HNO <sub>3</sub>               |  |            |  |
| For Lab Use Only   | Time: 1215       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene   | NAOH                           |  |            |  |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L        | HCL                            |  |            |  |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL     | 4° C(None)                     |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL     | Disinfected                    |  |            |  |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |           | Other                          |  |            |  |
| Relinquished By: <i>Jeff Dunmire</i> 4/14/10   |                  |  |      |    |             |       |        | Received By: <i>Angela Kan</i>  |                  |            |           | Date: 4/15/10                  |  | Time: 1732 |  |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  |            |           | Date:                          |  | Time:      |  |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  |            |           | Date:                          |  | Time:      |  |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: \_\_\_\_\_

|  |  |  |  |  |  |  |  |   |  |  |  |
|--|--|--|--|--|--|--|--|---|--|--|--|
| <b>Collector's Name:</b> Transfer COC to Applied Speciation and Consulting, LLC<br><small>(Please Print)</small> |  |  |  |  |  |  |  | <b>Description of Shipment</b><br><input checked="" type="checkbox"/> Shipped-Carrier: Next Day Air<br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |  |  |  |
| <b>Affiliation:</b> ESP KCRO NERO SERO SLRO SWRO WPP<br><small>(circle one)</small> DGLS HWP Other:              |  |  |  |  |  |  |  | No. Of Containers: 4  |  |  |  |

| Sample Number         | Sample Collected | Analyses   |           |    |             |       |        | Sample Type                                   | For Lab Use Only |            |         |                                |
|-----------------------|------------------|--|-----------|----|-------------|-------|--------|---|------------------|------------|---------|--------------------------------|
|                       |                  | Matrix   | Container |    | Preserved   |       |        |   |                  |            |         |                                |
| 1004736<br>(Sample A) | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |           |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|                       |                  |  |           |    |             |       |        | <input checked="" type="checkbox"/> Composite | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only      | Time: 1241       | D.O  | Flow      | pH | Spec. Cond. | Temp. | Other: | Modified                                      | Organic          | 2 oz glass | Nalgene | NAOH                           |
|                       |                  |  |           |    |             |       |        | Other:  | Sludge           | 8 oz glass | 1L      | HCL                            |
|                       |                  |  |           |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|                       |                  |  |           |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |
|                       |                  |  |           |    |             |       |        |   |                  | Other:     |         | Other                          |
| 1004737<br>(Sample B) | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture               |           |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|                       |                  |  |           |    |             |       |        | <input checked="" type="checkbox"/> Composite | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only      | Time: 1245       | D.O  | Flow      | pH | Spec. Cond. | Temp. | Other: | Modified                                      | Organic          | 2 oz glass | Nalgene | NAOH                           |
|                       |                  |  |           |    |             |       |        | Other:  | Sludge           | 8 oz glass | 1L      | HCL                            |
|                       |                  |  |           |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|                       |                  |  |           |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |
|                       |                  |  |           |    |             |       |        |   |                  | Other:     |         | Other                          |
| 1004738<br>(Sample C) | Date: 04/06/10   | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture               |           |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|                       |                  |  |           |    |             |       |        | <input checked="" type="checkbox"/> Composite | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only      | Time: 1252       | D.O  | Flow      | pH | Spec. Cond. | Temp. | Other: | Modified                                      | Organic          | 2 oz glass | Nalgene | NAOH                           |
|                       |                  |  |           |    |             |       |        | Other:  | Sludge           | 8 oz glass | 1L      | HCL                            |
|                       |                  |  |           |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|                       |                  |  |           |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |
|                       |                  |  |           |    |             |       |        |   |                  | Other:     |         | Other                          |
| 1004739<br>(Sample D) | Date: 04/07/10   | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |           |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|                       |                  |  |           |    |             |       |        | <input checked="" type="checkbox"/> Composite | Soil             | Cubitainer |         | HNO <sub>3</sub>               |
| For Lab Use Only      | Time: 835        | D.O  | Flow      | pH | Spec. Cond. | Temp. | Other: | Modified                                      | Organic          | 2 oz glass | Nalgene | NAOH                           |
|                       |                  |  |           |    |             |       |        | Other:  | Sludge           | 8 oz glass | 1L      | HCL                            |
|                       |                  |  |           |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |
|                       |                  |  |           |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |
|                       |                  |  |           |    |             |       |        |   |                  | Other:     |         | Other                          |

|   |                                      |               |            |
|---|--------------------------------------|---------------|------------|
| Relinquished By: <i>[Signature]</i> 4/14/10 | Received By: <i>[Signature]</i> -4°C | Date: 4/15/10 | Time: 1732 |
| Relinquished By:                            | Received By:                         | Date:         | Time:      |
| Relinquished By:                            | Received By:                         | Date:         | Time:      |



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID:

| <b>Collector's Name:</b> Transfer COC to Applied Speciation and Consulting, LLC<br><small>(Please Print)</small> |                  |  |      |    |             |       |        | <b>Description of Shipment</b>  |                  |               |         |                                |
|--|------------------|--|------|----|-------------|-------|--------|---|------------------|---------------|---------|--------------------------------|
| <b>Affiliation:</b> ESP KCRO NERO SERO SLRO SWRO WPP<br><small>(circle one)</small> DGLS HWP Other:              |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Shipped-Carrier: Next Day Air<br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |                  |               |         |                                |
|  |                  |  |      |    |             |       |        | No. Of Containers: 4  |                  |               |         |                                |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | For Lab Use Only |               |         |                                |
|  |                  |  |      |    |             |       |        |   | Matrix           | Container     |         | Preserved                      |
| ● 1004740<br>(Sample A)  | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture               |      |    |             |       |        | Grab  | Water            | 1L amber      | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|  | 04/07/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer    |         | HNO <sub>3</sub>               |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified  | Organic          | 2 oz glass    | Nalgene | NAOH                           |
|  | 845              |  |      |    |             |       |        | Other:  | Sludge           | 8 oz glass    | 1L      | HCL                            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial      | 500mL   | ( 4° C(None)                   |
|  |                  |  |      |    |             |       |        |   |                  | Encore        | 250mL   | Disinfected                    |
|  |                  |  |      |    |             |       |        |   |                  | Other:        |         | Other                          |
| ● 1004741<br>(Sample B)  | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture               |      |    |             |       |        | Grab  | Water            | 1L amber      | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|  | 04/07/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer    |         | HNO <sub>3</sub>               |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified  | Organic          | 2 oz glass    | Nalgene | NAOH                           |
|  | 855              |  |      |    |             |       |        | Other:  | Sludge           | 8 oz glass    | 1L      | HCL                            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial      | 500mL   | ( 4° C(None)                   |
|  |                  |  |      |    |             |       |        |   |                  | Encore        | 250mL   | Disinfected                    |
|  |                  |  |      |    |             |       |        |   |                  | Other:        |         | Other                          |
| ● 1004742<br>(Sample C)  | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, TOC, pH, Percent Moisture, ORP |      |    |             |       |        | Grab  | Water            | 1L amber      | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|  | 04/06/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer    |         | HNO <sub>3</sub>               |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified  | Organic          | 2 oz glass    | Nalgene | NAOH                           |
|  | 1624             |  |      |    |             |       |        | Other:  | Sludge           | 8 oz glass    | 1L      | HCL                            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial      | 500mL   | ( 4° C(None)                   |
|  |                  |  |      |    |             |       |        |   |                  | Encore        | 250mL   | Disinfected                    |
|  |                  |  |      |    |             |       |        |   |                  | Other:        |         | Other                          |
| ● 1004743<br>(Sample D)  | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture               |      |    |             |       |        | Grab  | Water            | 1L amber      | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |
|  | 04/06/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer    |         | HNO <sub>3</sub>               |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Modified  | Organic          | 2 oz glass    | Nalgene | NAOH                           |
|  | 1632             |  |      |    |             |       |        | Other:  | Sludge           | 8 oz glass    | 1L      | HCL                            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial      | 500mL   | ( 4° C(None)                   |
|  |                  |  |      |    |             |       |        |   |                  | Encore        | 250mL   | Disinfected                    |
|  |                  |  |      |    |             |       |        |   |                  | Other:        |         | Other                          |
| Relinquished By: <i>[Signature]</i> 4/14/10  |                  |  |      |    |             |       |        | Received By: <i>[Signature]</i> -4°C  |                  | Date: 4/15/10 |         | Time: 1732                     |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  | Date:         |         | Time:                          |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  | Date:         |         | Time:                          |



MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: \_\_\_\_\_

| <b>Collector's Name:</b> Transfer COC to Applied Speciation and Consulting, LLC<br><small>(Please Print)</small> |                  |  |      |    |             |       |        | <b>Description of Shipment</b><br><input checked="" type="checkbox"/> Shipped-Carrier: Next Day Air<br><input checked="" type="checkbox"/> Tape sealed and initialed<br><input type="checkbox"/> Hand Delivered |                  |            |         |                                |            |
|--|------------------|--|------|----|-------------|-------|--------|---|------------------|------------|---------|--------------------------------|------------|
| <b>Affiliation:</b> ESP KCRO NERO SERO SLRO SWRO WPP<br><small>(circle one)</small> DGLS HWP Other:              |                  |  |      |    |             |       |        | No. Of Containers: <b>2</b>   |                  |            |         |                                |            |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | For Lab Use Only |            |         |                                |            |
|  |                  |  |      |    |             |       |        |   | Matrix           | Container  |         | Preserved                      |            |
| 1004744<br><b>(Sample A)</b>   | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  | 04/06/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  | 1640             |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |         | Other                          |            |
| 1004745<br><b>(Sample B)</b>   | Date:            | Hexavalent Cr 6+ by EPA modified method 7199, Percent Moisture |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  | 04/06/10         |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |         | Other                          |            |
| <b>(Sample C)</b>  | Date:            |  |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |         | Other                          |            |
| <b>(Sample D)</b>  | Date:            |  |      |    |             |       |        | Grab  | Water            | 1L amber   | 120 mL  | H <sub>2</sub> SO <sub>4</sub> |            |
|  |                  |  |      |    |             |       |        | <input checked="" type="checkbox"/> Composite   | Soil             | Cubitainer |         | HNO <sub>3</sub>               |            |
| For Lab Use Only   | Time:            | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Organic          | 2 oz glass | Nalgene | NAOH                           |            |
|  |                  |  |      |    |             |       |        |   | Sludge           | 8 oz glass | 1L      | HCL                            |            |
|  |                  |  |      |    |             |       |        |   | Other:           | VOA vial   | 500mL   | 4° C(None)                     |            |
|  |                  |  |      |    |             |       |        |   |                  | Encore     | 250mL   | Disinfected                    |            |
|  |                  |  |      |    |             |       |        |   |                  | Other:     |         | Other                          |            |
| Relinquished By: <i>Joni Purmire</i> 4/4/10  |                  |  |      |    |             |       |        | Received By: <i>Arfa Ken</i> 4/15/10  |                  |            |         | Date: 4/15/10                  | Time: 1732 |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  |            |         | Date:                          | Time:      |
| Relinquished By:   |                  |  |      |    |             |       |        | Received By:  |                  |            |         | Date:                          | Time:      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: 100413005

B35

| Collector's Name: <u>Ken Hannon</u><br>(Please Print)                                |                  |  |      |    |             |       | Description of Shipment   |  |  |   |  |  |
|--|------------------|--|------|----|-------------|-------|---|--|--|---|--|--|
| Affiliation: <u>ESP</u> KCRO NERO SERO SLRO SWRO WPP<br>(circle one) DGLS HWP Other: |                  |  |      |    |             |       | Shipped-Carrier:<br>Tape sealed and initialed<br>x Hand Delivered |  |  |   |  |  |
|  |                  |  |      |    |             |       | No. Of Containers: <u>8</u>                                       |  |  |   |  |  |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       | Sample Type   | For Lab Use Only                                 |  |   |  |  |
|  |                  |  |      |    |             |       |   | Matrix   | Container  | Preserved   |  |  |
| 1<br>1004716<br>(Sample A)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       | Grab<br>x Composite<br>Modified                                   | 2 Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C(None)<br>Disinfected<br>Other |  |  |
| For Lab Use Only   | Time: 0950       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other:  |  |  |   |  |  |
| AB18511  |                  |  |      |    |             |       |   |  |  |   |  |  |
| 2<br>1004717<br>(Sample B)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       | Grab<br>x Composite<br>Modified                                   | 2 Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C(None)<br>Disinfected<br>Other |  |  |
| For Lab Use Only   | Time: 1518       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other:  |  |  |   |  |  |
| AB18512  |                  |  |      |    |             |       |   |  |  |   |  |  |
| 3<br>1004718<br>(Sample C)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       | Grab<br>x Composite<br>Modified                                   | 2 Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C(None)<br>Disinfected<br>Other |  |  |
| For Lab Use Only   | Time: 1620       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other:  |  |  |   |  |  |
| AB18513  |                  |  |      |    |             |       |   |  |  |   |  |  |
| 4<br>1004719<br>(Sample D)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       | Grab<br>x Composite<br>Modified                                   | 2 Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C(None)<br>Disinfected<br>Other |  |  |
| For Lab Use Only   | Time: 1617       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other:  |  |  |   |  |  |
| AB18514  |                  |  |      |    |             |       |   |  |  |   |  |  |
| Relinquished By: <u>Ken Hannon</u>   |                  | Received By: <u>Deek Rediger</u>   |      |    |             |       | Date: 4-13-10   | Time: 1320                                       |  |   |  |  |
| Relinquished By:   |                  | Received By:   |      |    |             |       | Date:   | Time:  |  |   |  |  |
| Relinquished By:   |                  | Received By:   |      |    |             |       | Date:   | Time:  |  |   |  |  |



| Sample I.D. Letter   | Site Description   |  |            |              |                      |
|--|--|--|------------|--------------|----------------------|
| Sample<br>A  | Facility ID:   | Site/Study Name:                             | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields                   | (Multiple) | FEP A8       | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |  |            |              |                      |
|  | PERFORM MATRIX SPIKE <sup>KH</sup> FF DUIS<br><del>VARA</del>  |  |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |  | Accuracy   | (check one)  | Sample Reference ID: |
|  | <input checked="" type="checkbox"/> Easting  | <input checked="" type="checkbox"/> Northing |            | EPE (meters) | 201                  |
|  |  |  |            | PDOP         |                      |
|  |  |  |            |              |                      |
| Sample<br>B  | Facility ID:   | Site/Study Name:                             | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields                   | (Multiple) | FEP A8       | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |  |            |              |                      |
|  | KH <sup>FF</sup> DUIS<br><del>VARA</del>   |  |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |  | Accuracy   | (check one)  | Sample Reference ID: |
|  | <input checked="" type="checkbox"/> Easting  | <input checked="" type="checkbox"/> Northing |            | EPE (meters) | 251                  |
|  |  |  |            | PDOP         |                      |
|  |  |  |            |              |                      |
| Sample<br>C  | Facility ID:   | Site/Study Name:                             | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields                   | (Multiple) | FEP A8       | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |  |            |              |                      |
|  | KH <sup>FF</sup> DUIS<br><del>VARA</del>   |  |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |  | Accuracy   | (check one)  | Sample Reference ID: |
|  | <input checked="" type="checkbox"/> Easting  | <input checked="" type="checkbox"/> Northing |            | EPE (meters) | 252                  |
|  |  |  |            | PDOP         |                      |
|  |  |  |            |              |                      |
| Sample<br>D  | Facility ID:   | Site/Study Name:                             | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields                   | (Multiple) | FEP A8       | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |  |            |              |                      |
|  | KH <sup>FF</sup> DUIS<br><del>VARA</del>   |  |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |  | Accuracy   | (check one)  | Sample Reference ID: |
|  | <input checked="" type="checkbox"/> Easting  | <input checked="" type="checkbox"/> Northing |            | EPE (meters) | 253                  |
|  |  |  |            | PDOP         |                      |
|  |  |  |            |              |                      |
| REMARKS:<br>HWP: Michael Stroh      PERFORM MATRIX SPIKES ON ALL<br>SAMPLES for Cr <sup>16</sup> |  |  |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

2  
B35

LABORATORY ORDER ID: 100413005

|  |  |  |  |  |  |  |   |  |  |  |  |
|--|--|--|--|--|--|--|---|--|--|--|--|
| Collector's Name: <u>Ken Hannon</u><br>(Please Print)                                |  |  |  |  |  |  | Description of Shipment   |  |  |  |  |
| Affiliation: <u>ESP</u> KCRO NERO SERO SLRO SWRO WPP<br>(circle one) DGLS HWP Other: |  |  |  |  |  |  | Shipped-Carrier:<br>Tape sealed and initialed<br><input checked="" type="checkbox"/> Hand Delivered |  |  |  |  |
|  |  |  |  |  |  |  | No. Of Containers: <u>8</u>   |  |  |  |  |

| Sample Number              | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | For Lab Use Only                     |   |   |                                       |  |
|----------------------------|------------------|--|------|----|-------------|-------|--------|---|--------------------------------------|---|---|---------------------------------------|--|
|                            |                  |  |      |    |             |       |        |   | Matrix                               | Container   | Preserved   |                                       |  |
| 5<br>1004720<br>(Sample A) | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |                                       |  |
| For Lab Use Only           | Time: 1239       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: bag                              | 500mL<br>250mL  | 2 4° C (None)<br>Disinfected<br>Other |  |
| 6<br>1004721<br>(Sample B) | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |                                       |  |
| For Lab Use Only           | Time: 0941       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: bag                              | 500mL<br>250mL  | 2 4° C (None)<br>Disinfected<br>Other |  |
| 7<br>1004722<br>(Sample C) | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |                                       |  |
| For Lab Use Only           | Time: 1430       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: bag                              | 500mL<br>250mL  | 2 4° C (None)<br>Disinfected<br>Other |  |
| 8<br>1004723<br>(Sample D) | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |                                       |  |
| For Lab Use Only           | Time: 1227       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: bag                              | 500mL<br>250mL  | 2 4° C (None)<br>Disinfected<br>Other |  |

|                                    |                                 |                      |                   |
|------------------------------------|---------------------------------|----------------------|-------------------|
| Relinquished By: <u>Ken Hannon</u> | Received By: <u>Duke Endrey</u> | Date: <u>4-13-10</u> | Time: <u>1320</u> |
| Relinquished By:                   | Received By:                    | Date:                | Time:             |
| Relinquished By:                   | Received By:                    | Date:                | Time:             |



| Sample I.D. Letter  | Site Description   |                            |            |              |                      |
|---|--|----------------------------|------------|--------------|----------------------|
| Sample<br>A   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | FF DUIS  |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 254                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>B   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 301                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>C   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 302                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>D   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 303                  |
|   |  |                            |            | PDOP         |                      |
| REMARKS:  |  |                            |            |              |                      |
| HWP: Michael Stroh      PERFORM MATRIX SPIKES ON EACH SAMPLE FOR Cr <sup>+6</sup> |  |                            |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

B35

LABORATORY ORDER ID: 100413005

| <b>Collector's Name:</b> Ken Hannon<br>(Please Print)   |                  |  |      |    |             |       |        | <b>Description of Shipment</b>  |                                      |   |                |   |  |
|---|------------------|--|------|----|-------------|-------|--------|---|--------------------------------------|---|----------------|---|--|
| <b>Affiliation:</b> <input checked="" type="radio"/> ESP <input type="radio"/> KCRO <input type="radio"/> NERO <input type="radio"/> SERO <input type="radio"/> SLRO <input type="radio"/> SWRO <input type="radio"/> WPP<br>(circle one) <input type="radio"/> DGLS <input type="radio"/> HWP <input type="radio"/> Other: |                  |  |      |    |             |       |        | Shipped-Carrier: _____<br>Tape sealed and initialed _____<br><input checked="" type="checkbox"/> Hand Delivered |                                      |   |                |   |  |
|   |                  |  |      |    |             |       |        | No. Of Containers: 8  |                                      |   |                |   |  |
| Sample Number   | Sample Collected | Analyses   |      |    |             |       |        | Sample Type   | For Lab Use Only                     |   |                |   |  |
|   |                  |  |      |    |             |       |        |   | Matrix                               | Container   | Preserved      |   |  |
| 9<br>1004724<br>(Sample A)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL         | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |  |
| For Lab Use Only  | Time: 1255       | D.O.   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: (bagg)                           | 500mL<br>250mL | 2 4° C (None)<br>Disinfected<br>Other                             |  |
| 10<br>1004725<br>(Sample B)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL         | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |  |
| For Lab Use Only  | Time: 1316       | D.O.   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: (bagg)                           | 500mL<br>250mL | 2 4° C (None)<br>Disinfected<br>Other                             |  |
| 11<br>1004726<br>(Sample C)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL         | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |  |
| For Lab Use Only  | Time: 1306       | D.O.   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: (bagg)                           | 500mL<br>250mL | 2 4° C (None)<br>Disinfected<br>Other                             |  |
| 12<br>1004727<br>(Sample D)   | Date: 4-7-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L | 120 mL         | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL |  |
| For Lab Use Only  | Time: 0818       | D.O.   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  | Other:                               | VOA vial<br>Encore<br>Other: (bagg)                           | 500mL<br>250mL | 2 4° C (None)<br>Disinfected<br>Other                             |  |
| Relinquished By: Ken Hannon   |                  | Received By: Derek Ruckner   |      |    |             |       |        | Date: 4-13-10   | Time: 1320                           |   |                |   |  |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:   | Time:                                |   |                |   |  |
| Relinquished By:  |                  | Received By:   |      |    |             |       |        | Date:   | Time:                                |   |                |   |  |



| Sample I.D. Letter  | Site Description   |                            |            |              |                      |
|---|--|----------------------------|------------|--------------|----------------------|
| Sample A  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
| Sample A  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 304                  |
|   |  |                            |            | PDOP         |                      |
|   |  |                            |            |              |                      |
| Sample B  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
| Sample B  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 305                  |
|   |  |                            |            | PDOP         |                      |
|   |  |                            |            |              |                      |
| Sample C  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
| Sample C  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 306                  |
|   |  |                            |            | PDOP         |                      |
|   |  |                            |            |              |                      |
| Sample D  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUIS  |                            |            |              |                      |
| Sample D  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 312                  |
|   |  |                            |            | PDOP         |                      |
|   |  |                            |            |              |                      |
| REMARKS:<br>HWP: Michael Stroh      PERFORM Matrix spikes on All samples for Cr <sup>+6</sup> |  |                            |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

4

B35

LABORATORY ORDER ID: 100413005

| <b>Collector's Name:</b> Ken Hannon<br>(Please Print)  |                  |  |      |    |             |       |        | <b>Description of Shipment</b>   |  |   |        |  |  |           |  |  |
|--|------------------|--|------|----|-------------|-------|--------|--|--|---|--------|--|--|-----------|--|--|
| <b>Affiliation:</b> (circle one) <input checked="" type="radio"/> ESP <input type="radio"/> KCRO <input type="radio"/> NERO <input type="radio"/> SERO <input type="radio"/> SLRO <input type="radio"/> SWRO <input type="radio"/> WPP<br>(circle one) <input type="radio"/> DGLS <input type="radio"/> HWP <input type="radio"/> Other: |                  |  |      |    |             |       |        | <b>Shipped-Carrier:</b><br>Tape sealed and initialed<br><input checked="" type="checkbox"/> Hand Delivered |  |   |        |  |  |           |  |  |
|  |                  |  |      |    |             |       |        | <b>No. Of Containers:</b> 8  |  |   |        |  |  |           |  |  |
| Sample Number  | Sample Collected | Analyses   |      |    |             |       |        | Sample Type  | For Lab Use Only                               |   |        |  |  |           |  |  |
|  |                  |  |      |    |             |       |        |  | Matrix   | Container   |        |  |  | Preserved |  |  |
| 13<br>1004728<br>(Sample A)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified  | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |           |  |  |
| For Lab Use Only   | Time: 1415       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   |  |   |        |  |  |           |  |  |
| A618523  |                  |  |      |    |             |       |        |  |  |   |        |  |  |           |  |  |
| 14<br>1004729<br>(Sample B)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified  | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |           |  |  |
| For Lab Use Only   | Time: 1350       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   |  |   |        |  |  |           |  |  |
| A618524  |                  |  |      |    |             |       |        |  |  |   |        |  |  |           |  |  |
| 15<br>1004730<br>(Sample C)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified  | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |           |  |  |
| For Lab Use Only   | Time: 1407       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   |  |   |        |  |  |           |  |  |
| A618525  |                  |  |      |    |             |       |        |  |  |   |        |  |  |           |  |  |
| 16<br>1004731<br>(Sample D)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH,<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified  | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |           |  |  |
| For Lab Use Only   | Time: 1510       | D.O  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:   |  |   |        |  |  |           |  |  |
| A618526  |                  |  |      |    |             |       |        |  |  |   |        |  |  |           |  |  |
| Relinquished By: Ken Hannon  |                  | Received By: Duck Buehler  |      |    |             |       |        | Date: 4-13-10  |  | Time: 1320  |        |  |  |           |  |  |
| Relinquished By:   |                  | Received By:   |      |    |             |       |        | Date:  |  | Time:   |        |  |  |           |  |  |
| Relinquished By:   |                  | Received By:   |      |    |             |       |        | Date:  |  | Time:   |        |  |  |           |  |  |



| Sample I.D. Letter  | Site Description   |                            |            |              |                      |
|---|--|----------------------------|------------|--------------|----------------------|
| Sample<br>A   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUSTS   |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 313                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>B   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUSTS   PERFORM SRM SPIKE IN TRIPLICATE   |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 319                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>C   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUSTS   |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 320                  |
|   |  |                            |            | PDOP         |                      |
| Sample<br>D   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|   | YARD DUSTS   |                            |            |              |                      |
|   | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|   | X Easting  | Y Northing                 |            | EPE (meters) | 325                  |
|   |  |                            |            | PDOP         |                      |
| REMARKS:  |  |                            |            |              |                      |
| HWP: Michael Stroh  |  |                            |            |              |                      |
| PERFORM MATRIX SPIKE ON ALL SAMPLES FOR Cr <sup>+6</sup>        |  |                            |            |              |                      |
| PERFORM SRM SPIKE ON 1004729 IN TRIPLICATE FOR Cr <sup>+6</sup> |  |                            |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

6

B35

LABORATORY ORDER ID: 100413005

| <b>Collector's Name:</b><br>(Please Print) <u>Ken Hannon</u>                                   |                  |   |      |    |             |       |        | <b>Description of Shipment</b>  |   |  |           |  |  |
|--|------------------|---|------|----|-------------|-------|--------|---|---|--|-----------|--|--|
| <b>Affiliation:</b><br>(circle one) <u>ESP</u> KCRO NERO SERO SLRO SWRO WPP<br>DGLS HWP Other: |                  |   |      |    |             |       |        | Shipped-Carrier:<br>Tape sealed and initialed<br><input checked="" type="checkbox"/> Hand Delivered |   |  |           |  |  |
|  |                  |   |      |    |             |       |        | No. Of Containers: <u>8</u>   |   |  |           |  |  |
| Sample Number  | Sample Collected | Analyses  |      |    |             |       |        | Sample Type   | For Lab Use Only                                      |  |           |  |  |
|  |                  |   |      |    |             |       |        |   | Matrix  | Container  | Preserved |  |  |
| 17<br>1004732<br>(Sample A)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified                                   | Water<br><u>2</u> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: <u>bag</u> | 120 mL    | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18527  | Time: 1516       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |           |  |  |
| 18<br>1004733<br>(Sample B)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified                                   | Water<br><u>2</u> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: <u>bag</u> | 120 mL    | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18528  | Time: 1520       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |           |  |  |
| 19<br>1004734<br>(Sample C)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified                                   | Water<br><u>2</u> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: <u>bag</u> | 120 mL    | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18529  | Time: 1753       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |           |  |  |
| 20<br>1004735<br>(Sample D)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>CR |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified                                   | Water<br><u>2</u> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: <u>bag</u> | 120 mL    | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18530  | Time: 1215       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |           |  |  |
| Relinquished By: <u>Ken Hannon</u>   |                  | Received By: <u>Druck R. L. Jr.</u>   |      |    |             |       |        | Date: 4-13-10   | Time: 1320  |  |           |  |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   | Time:   |  |           |  |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   | Time:   |  |           |  |  |



| Sample I.D. Letter                                       | Site Description   |                            |            |              |                      |
|--|--|----------------------------|------------|--------------|----------------------|
| Sample<br>A  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|  | YARD DUIS  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 326                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>B  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|  | YARD DUIS  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 352                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>C  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|  | YARD DUIS  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 353                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>D  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|  | YARD DUIS  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 354                  |
|  |  |                            |            | PDOP         |                      |
| REMARKS:   |  |                            |            |              |                      |
| HWP: Michael Stroh                                       |  |                            |            |              |                      |
| PERFORM MATRIX SPIKES ON ALL SAMPLES FOR Cr <sup>6</sup> |  |                            |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

B35

LABORATORY ORDER ID: 100413005

| Collector's Name: <u>Ken Hannon</u><br>(Please Print)                                |                  |   |      |    |             |       |        | Description of Shipment   |  |   |  |  |
|--|------------------|---|------|----|-------------|-------|--------|---|--|---|--|--|
| Affiliation: <u>ESP</u> KCRO NERO SERO SLRO SWRO WPP<br>(circle one) DGLS HWP Other: |                  |   |      |    |             |       |        | Shipped-Carrier: _____<br>Tape sealed and initialed _____<br>x Hand Delivered _____ |  |   |  |  |
|  |                  |   |      |    |             |       |        | No. Of Containers: <u>6</u>   |  |   |  |  |
| Sample Number  | Sample Collected | Analyses  |      |    |             |       |        | Sample Type   | For Lab Use Only                               |   |  |  |
|  |                  |   |      |    |             |       |        |   | Matrix   | Container   | Preserved  |  |
| 21<br>1004736<br>(Sample A)  | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr                               |      |    |             |       |        | Grab<br>x Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18531  | Time: 1241       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |  |   |  |  |
| 22<br>1004737<br>(Sample B)  | Date: 4-6-10     | Hexavalent Chromium, <del>TOC, pH, K<sup>+</sup></del> Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br>x Composite<br>Modified   | Water<br>1 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other:     | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18532  | Time: 1245       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |  |   |  |  |
| 23<br>1004738<br>(Sample C)  | Date: 4-6-10     | Hexavalent Chromium, <del>TOC, pH, K<sup>+</sup></del> Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br>x Composite<br>Modified   | Water<br>1 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other:     | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18533  | Time: 1252       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |  |   |  |  |
| 24<br>1004739<br>(Sample D)  | Date: 4-7-10     | Hexavalent Chromium, TOC, pH, Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)<br>Cr                               |      |    |             |       |        | Grab<br>x Composite<br>Modified   | Water<br>2 Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: bag | 120 mL<br>H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NaOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |  |
| For Lab Use Only<br>AB18534  | Time: 0835       | D.O   | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |  |   |  |  |
| Relinquished By: <u>Ken Hannon</u>   |                  | Received By: <u>Dunk Rudy</u>   |      |    |             |       |        | Date: 4-13-10   | Time: 1320                                     |   |  |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   | Time:  |   |  |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   | Time:  |   |  |  |



| Sample I.D. Letter  | Site Description   |                            |            |            |              |
|---|--|----------------------------|------------|------------|--------------|
| Sample<br>A   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code: | Job Code:    |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEP A8     | NJ10<br>TSFF |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |            |              |
|   | SU 88 repl 1   |                            |            |            |              |
| Sample<br>B   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code: | Job Code:    |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEP A8     | NJ10<br>TSFF |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |            |              |
|   | SU 88 repl 2   |                            |            |            |              |
| Sample<br>C   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code: | Job Code:    |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEP A8     | NJ10<br>TSFF |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |            |              |
|   | SU 88 repl 3   |                            |            |            |              |
| Sample<br>D   | Facility ID:   | Site/Study Name:           | County:    | LDPR Code: | Job Code:    |
|   |  | Tannery Sludge Farm Fields | (Multiple) | FEP A8     | NJ10<br>TSFF |
|   | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |            |              |
|   | SU 37 REPL 1 <del>PERFORM 1 SRM SPIKE ON THIS SAMPLE</del>   |                            |            |            |              |
| REMARKS:  |  |                            |            |            |              |
| HWP: Michael Stroh  |  |                            |            |            |              |
| PERFORM MATRIX SPIKES KH  |  |                            |            |            |              |
| PERFORM MATRIX SPIKES ON 1004736 and 1004739 for Cr <sup>+6</sup> |  |                            |            |            |              |
| PERFORM SRM SPIKE ON 1004739 for Cr <sup>+6</sup>                 |  |                            |            |            |              |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: 100413005

B35

| <b>Collector's Name:</b> Ken Hannon<br>(Please Print)   |                  |   |      |    |             |       |        | <b>Description of Shipment</b>  |   |  |   |   |
|---|------------------|---|------|----|-------------|-------|--------|---|---|--|---|---|
| <b>Affiliation:</b> <input checked="" type="radio"/> ESP <input type="radio"/> KCRO <input type="radio"/> NERO <input type="radio"/> SERO <input type="radio"/> SLRO <input type="radio"/> SWRO <input type="radio"/> WPP<br>(circle one) <input type="radio"/> DGLS <input type="radio"/> HWP Other: |                  |   |      |    |             |       |        | Shipped-Carrier: _____<br>Tape sealed and initialed _____<br><input checked="" type="checkbox"/> Hand Delivered |   |  |   |   |
|   |                  |   |      |    |             |       |        | No. Of Containers: 5  |   |  |   |   |
| Sample Number   | Sample Collected | Analyses  |      |    |             |       |        | Sample Type   | For Lab Use Only  |  |   |   |
|   |                  |   |      |    |             |       |        |   | Matrix  | Container  |   | Preserved   |
| 25<br>1004740<br>(Sample A)   | Date: 4-7-10     | Hexavalent Chromium, TOC, pH, $\leq 4$<br>Percent Moisture, <del>ORP</del> , Total Metals (Fe, Mn, Mo, V, Al) |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass<br>8 oz glass<br>VOA vial<br>Encore<br>Other: | 120 mL<br>Nalgene<br>1L<br>500mL<br>250mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other: |
| For Lab Use Only<br>AB18535   | Time: 0845       | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |   |   |
| 26<br>1004741<br>(Sample B)   | Date: 4-7-10     | Hexavalent Chromium, TOC, pH, $\leq 4$<br>Percent Moisture, <del>ORP</del> , Total Metals (Fe, Mn, Mo, V, Al) |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass<br>8 oz glass<br>VOA vial<br>Encore<br>Other: | 120 mL<br>Nalgene<br>1L<br>500mL<br>250mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other: |
| For Lab Use Only<br>AB18536   | Time: 0855       | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |   |   |
| 27<br>1004742<br>(Sample C)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, $\leq 4$<br>Percent Moisture, ORP, Total Metals (Fe, Mn, Mo, V, Al)             |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass<br>8 oz glass<br>VOA vial<br>Encore<br>Other: | 120 mL<br>Nalgene<br>1L<br>500mL<br>250mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other: |
| For Lab Use Only<br>AB18537   | Time: 1624       | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |   |   |
| 28<br>1004743<br>(Sample D)   | Date: 4-6-10     | Hexavalent Chromium, TOC, pH, $\leq 4$<br>Percent Moisture, <del>ORP</del> , Total Metals (Fe, Mn, Mo, V, Al) |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br>Organic<br>Sludge<br>Other: | 1L amber<br>Cubitainer<br>2 oz glass<br>8 oz glass<br>VOA vial<br>Encore<br>Other: | 120 mL<br>Nalgene<br>1L<br>500mL<br>250mL | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other: |
| For Lab Use Only<br>AB18538   | Time: 1632       | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |   |   |
| Relinquished By: Ken Hannon   |                  | Received By: Duke Ruediger  |      |    |             |       |        | Date: 4-13-10   |   | Time: 1320   |   |   |
| Relinquished By:  |                  | Received By:  |      |    |             |       |        | Date:   |   | Time:  |   |   |
| Relinquished By:  |                  | Received By:  |      |    |             |       |        | Date:   |   | Time:  |   |   |



| Sample I.D. Letter   | Site Description   |                            |            |              |                      |
|--|--|----------------------------|------------|--------------|----------------------|
| Sample<br>A  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10                 |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              | TSFF                 |
|  | SU 37 Repl 2   |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 214                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>B  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10                 |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              | TSFF                 |
|  | SU 37 Repl 3   |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 214                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>C  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10                 |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              | TSFF                 |
|  | SU 161 Repl 2  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 221                  |
|  |  |                            |            | PDOP         |                      |
| Sample<br>D  | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|  |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10                 |
|  | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              | TSFF                 |
|  | SU 161 Repl 2  |                            |            |              |                      |
|  | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|  | X Easting  | Y Northing                 |            | EPE (meters) | 221                  |
|  |  |                            |            | PDOP         |                      |
| REMARKS:<br>HWP: Michael Stroh<br>PERFORM MATRIX SPIKE ON 100472 <sup>242</sup> For Cr <sup>+6</sup><br>PERFORM SRM SPIKE ON 100472 For Cr <sup>+6</sup> |  |                            |            |              |                      |





MISSOURI DEPARTMENT OF NATURAL RESOURCES  
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD

Page 1 of 2

LABORATORY ORDER ID: 100413005

B35

| <b>Collector's Name:</b> Ken Hannon<br><small>(Please Print)</small>   |                  |   |      |    |             |       |        | <b>Description of Shipment</b><br>Shipped-Carrier: _____<br>Tape sealed and initialed _____<br><input checked="" type="checkbox"/> Hand Delivered |   |  |  |
|--|------------------|---|------|----|-------------|-------|--------|---|---|--|--|
| <b>Affiliation:</b> <input checked="" type="radio"/> ESP <input type="radio"/> KCRO <input type="radio"/> NERO <input type="radio"/> SERO <input type="radio"/> SLRO <input type="radio"/> SWRO <input type="radio"/> WPP<br><small>(circle one)</small> <input type="radio"/> DGLS <input type="radio"/> HWP Other: _____ |                  |   |      |    |             |       |        | No. Of Containers: 2  |   |  |  |
| Sample Number  | Sample Collected | Analyses  |      |    |             |       |        | Sample Type   | For Lab Use Only  |  |  |
|  |                  |   |      |    |             |       |        |   | Matrix  | Container  | Preserved  |
| 29<br>1004744<br>(Sample A)  | Date: 4-6-10     | Hexavalent Chromium, <del>TOC, pH, KH</del><br>Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br><input type="checkbox"/> Organic<br><input type="checkbox"/> Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |
| For Lab Use Only<br>AB18539  | Time: 1640       | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |  |
| 30<br>1004745<br>(Sample B)  | Date: 4-6-10     | Hexavalent Chromium, <del>TOC, pH, KH</del><br>Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br><input type="checkbox"/> Organic<br><input type="checkbox"/> Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |
| For Lab Use Only<br>AB18540  | Time:            | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |  |
| (Sample C)   | Date:            | Hexavalent Chromium, <del>TOC, pH, KH</del><br>Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br><input type="checkbox"/> Organic<br><input type="checkbox"/> Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |
| For Lab Use Only   | Time:            | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |  |
| (Sample D)   | Date:            | Hexavalent Chromium, <del>TOC, pH, KH</del><br>Percent Moisture, <del>ORP, Total Metals (Fe, Mn, Mo, V, Al)</del> |      |    |             |       |        | Grab<br><input checked="" type="checkbox"/> Composite<br>Modified   | Water<br><input type="checkbox"/> Soil<br><input type="checkbox"/> Organic<br><input type="checkbox"/> Sludge<br>Other: | 1L amber 120 mL<br>Cubitainer<br>2 oz glass Nalgene<br>8 oz glass 1L<br>VOA vial 500mL<br>Encore 250mL<br>Other: | H <sub>2</sub> SO <sub>4</sub><br>HNO <sub>3</sub><br>NAOH<br>HCL<br>4° C (None)<br>Disinfected<br>Other |
| For Lab Use Only   | Time:            | D.O.  | Flow | pH | Spec. Cond. | Temp. | Other: | Other:  |   |  |  |
| Relinquished By: Ken Hannon  |                  | Received By: David Ruden  |      |    |             |       |        | Date: 3-14-10   |   | Time: 1320   |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   |   | Time:  |  |
| Relinquished By:   |                  | Received By:  |      |    |             |       |        | Date:   |   | Time:  |  |



| Sample I.D. Letter | Site Description   |                            |            |              |                      |
|--------------------|--|----------------------------|------------|--------------|----------------------|
| Sample<br>A        | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|                    |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|                    | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|                    | SU 161 rpt 3   |                            |            |              |                      |
|                    | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|                    | X Easting  | Y Northing                 |            | EPE (meters) | 221                  |
|                    |  |                            |            | PDOP         |                      |
| Sample<br>B        | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|                    |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|                    | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|                    | BLIND REPLICATE  |                            |            |              |                      |
|                    | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|                    | X Easting  | Y Northing                 |            | EPE (meters) |                      |
|                    |  |                            |            | PDOP         |                      |
| Sample<br>C        | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|                    |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|                    | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|                    |  |                            |            |              |                      |
|                    | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|                    | X Easting  | Y Northing                 |            | EPE (meters) |                      |
|                    |  |                            |            | PDOP         |                      |
| Sample<br>D        | Facility ID:   | Site/Study Name:           | County:    | LDPR Code:   | Job Code:            |
|                    |  | Tannery Sludge Farm Fields | (Multiple) | FEPA8        | NJ10<br>TSFF         |
|                    | Sample Comment (briefly describe where and how the sample was collected, station number, sample type, etc.): |                            |            |              |                      |
|                    |  |                            |            |              |                      |
|                    | GPS Coordinates (Record Coordinates in UTM Zone 15 NAD 83 Only):   |                            | Accuracy   | (check one)  | Sample Reference ID: |
|                    | X Easting  | Y Northing                 |            | EPE (meters) |                      |
|                    |  |                            |            | PDOP         |                      |
| REMARKS:           |  |                            |            |              |                      |
| HWP: Michael Stroh |  |                            |            |              |                      |

## **APPENDIX C**

### **Field Notes and Photo Log**

Tannery Sludge Farm Fields Site  
Andrew, Buchanan, Clinton and DeKalb Counties, MO

Location Washington Co. Date 4-15-09  
 Project / Client WCLD-Furnace Creek

back to Hwy 21 south to bridge  
 over ~~that same stream~~. photo 22  
 caps ~~at~~ <sup>at</sup> Big River. 23, 24  
 There are ADC signs along here  
 for Bootleg River access. No boat  
 ramp, but canoe access + fishing  
 River looks fishable + floatable here.  
 photos 25 @ Bootleg Access

Returned to Jeff City @ 14:00

Location \_\_\_\_\_ Date 4-6-10  
 Project / Client Tannery Sludge Farm Fields

Loc ID 201/301

12:15

Collected yard DUTS from 4  
 yard SUS. / 5 incr. per SU.  
 photo #1 camera B5

12:31 SU 14 - Selected as uniform  
 upland pasture, well vegetated  
 lots of cow flops.

12:50 SU 66 Selected as low  
 swampy area very wet, but well  
 vegetated.

13:05 SU 41 Selected as mix of  
 upland and low areas. also  
 borders tree line, where



104 Location King Lake Conserv. Area Date 4-6-10  
Project / Client Tannery Sludge Farm fields

Loc ID 251

SU: 144

14:35

soybean field uniform

upland

photo #2 camera B5

14:48 SU: 221

Fallow grassland  
uniform, slight slope  
bordered by tree line

15:05 SU: 409 1/2 - just N of su 409 across  
gravel road. Grassland uniform  
photo #4 camera B5

15:18 SU: 387 - soybean field uniform  
upland: near gravel road.  
photos 5+6 camera B5

Location \_\_\_\_\_ Date 4-6-10  
Project / Client Tannery Sludge Farm fields

105

Loc ID 221

16:24

16:32 SU 162 QC replicates x 3

16:40

uniform corn field

photos 7, 8, 9

Loc ID 353

Andrew Co.

BKgd. Residence

17:35

3 SUS.

photos 10, 11

Loc ID 312.

0815 Residence collected DUIS from  
3 yard SUS / 5 inc. each.  
Split collected repl. bag for  
Mott Sugar w/ Accretis.

Loc ID 214

0835 SU 37. collected 6 replicate

0845 IS 10 increments each.

0855 Gave 3 to Matt w/ ID track.  
Collected

Provided Matt with handcopy map  
and list of analytical parameters.

Uniform pasture - lots of cow plops





SOIL SAMPLE LOG  
TANNERY SLUDGE FARM FIELDS SITE

| Parcel # | Loc. ID    | Sample ID (SUgridcell #.) | Date Collected | Time Collected | Collector's Name | Comments                               |
|----------|------------|---------------------------|----------------|----------------|------------------|--|
| 1        | 354<br>301 | YARD DUES                 | 4-6-10         | 1215           | Ken H.           | 4 sus                                  |
| 2        | 254<br>201 | 14                        | "              | 1239           | "                | pasture upland uniform                 |
| 3        | 254<br>201 | 66                        | "              | 1250           | "                | pasture low wet area                   |
| 4        | 254<br>201 | 41                        | "              | 1305           | "                | pasture incl. both upland + low        |
| 5        | 251        | 144                       | "              | 1435           | "                | Soybean field upland                   |
| 6        | 251        | 221                       | "              | 1448           | "                | fallow grassland bordered by tree line |
| 7        | 251        | 4387                      | "              | 151805         | "                | Soybean field uniform upland           |
| 8        |            |                           |                |                |                  | <del>Soybean field uniform</del> MS    |
| 9        | 251        | 409 1/2                   | "              | 1448           | "                | fallow grassland N. slope              |
| 10       | 221        | 162 repl.1                | "              | 1624           | "                | Corn field uniform                     |
| 11       | 221        | 162 repl.2                | "              | 1632           | "                | "                                      |
| 12       | 221        | 162 repl.3                | "              | 1640           | "                | "                                      |
| 13       | 353        | YARD DUES                 | "              | 1735           | "                | 3 sus                                  |
| 14       | 312        | YARD DUES                 | 4-7-10         | 0815           | "                | 3 sus                                  |
| 15       | 214        | 37                        | "              | 0835           | "                | Repl. 1 uniform pasture                |
| 16       | 214        | 37                        | "              | 0845           | "                | Repl. 2 "                              |
| 17       | 214        | 37                        | "              | 0855           | "                | Repl. 3 "                              |
| 18       |            |                           |                |                |                  |  |
| 19       |            |                           |                |                |                  |  |
| 20       |            |                           |                |                |                  |  |
| 21       |            |                           |                |                |                  |  |
| 22       |            |                           |                |                |                  |  |
| 23       |            |                           |                |                |                  |  |
| 24       |            |                           |                |                |                  |  |
| 25       |            |                           |                |                |                  |  |
| 26       |            |                           |                |                |                  |  |
| 27       |            |                           |                |                |                  |  |
| 28       |            |                           |                |                |                  |  |
| 29       |            |                           |                |                |                  |  |
| 30       |            |                           |                |                |                  |  |
| 31       |            |                           |                |                |                  |  |
| 32       |            |                           |                |                |                  |  |





SOIL SAMPLE LOG  
TANNERY SLUDGE FARM FIELDS SITE

| Parcel # | Loc. ID   | Sample ID (SU grid cell #.) | Date Collected | Time Collected | Collector's Name | Comments   |
|----------|-----------|-----------------------------|----------------|----------------|------------------|--|
| 1        | 6632 205  | 88A                         | 4/6/10         | 1241           | SC               | pasture  |
| 2        | 6632 205  | 88B                         | "              | 1245           | VW               | pasture  |
| 3        | 6632 205  | 88C                         | "              | 1252           | SC               | pasture  |
| 4        | 6632 306  | Y                           | "              | 1306           | SC               | yard   |
| 5        | 6632 305  | Y                           | "              | 1316           | SC               | yard   |
| 6        | 18970 319 | Y                           | "              | 1350           | SC               | yard - applied fertilizer one week ago                         |
| 7        | 18971 320 | Y                           | "              | 1407           | SC               | yard   |
| 8        | 4859 325  | Y                           | "              | 1510           | SC               | yard   |
| 9        | 4859 326  | Y                           | "              | 1516           | VW               | yard   |
| 10       | 253       | 56                          | "              | 1617           | SC               | saddles ridge formerly hay field                               |
| 11       | 253       | 87                          | "              | 1657           | SC               | highest ridge  |
| 12       | 253       | 63                          | "              | 1720           | VW               | South sloping hill along tree line                             |
| 13       | 353       | Yard                        | "              | 1735           | KH               | background yard abandoned house                                |
| 14       | 301       | yard                        | 4/7/10         | 941            | SC               | yard   |
| 15       | 201       | South field                 | "              | 950            | SC               | pasture w/ brush - low lying                                   |
| 16       | 201       | North field                 | "              | 955            | BS               | collects runoff from SU -                                      |
| 17       | 201       | East field                  | "              | 1015           | BS               | drainage ditch runs through SU - all pasture - cattle in field |
| 18       |           |                             |                |                |                  |  |
| 19       |           |                             |                |                |                  |  |
| 20       |           |                             |                |                |                  |  |
| 21       |           |                             |                |                |                  |  |
| 22       |           |                             |                |                |                  |  |
| 23       |           |                             |                |                |                  |  |
| 24       |           |                             |                |                |                  |  |
| 25       |           |                             |                |                |                  |  |
| 26       |           |                             |                |                |                  |  |
| 27       |           |                             |                |                |                  |  |
| 28       |           |                             |                |                |                  |  |
| 29       |           |                             |                |                |                  |  |
| 30       |           |                             |                |                |                  |  |
| 31       |           |                             |                |                |                  |  |
| 32       |           |                             |                |                |                  |  |





SOIL SAMPLE LOG  
TANNERY SLUDGE FARM FIELDS SITE

Team No. 3  
Shelly + Brad

| Parcel # | Loc. ID            | Sample ID (SUgridcell #.) | Date Collected    | Time Collected  | Collector's Name | Comments                                     |
|----------|--------------------|---------------------------|-------------------|-----------------|------------------|--|
| 1        | 303                | Yard                      | 4-6-10            | 1227            | Brad Swank       | row crop vs pasture<br>Yard                  |
| 2        | 304                | Yard                      | "                 | 1255            | "                | Yard   |
| 3        | <del>304</del> 204 | 51                        | "                 | 1310            | "                | Pasture                                      |
| 4        | 313                | Yard                      | "                 | 1415            | "                | Yard   |
| 5        | <del>302</del>     | <del>Yard</del>           | "                 |                 |                  | It was fertilized field until 7 or 8 yrs ago |
| 6        | 302                | Yard                      | 4-6-10            | 1430            | "                | Yard   |
| 7        | 352                | Yard                      | 4-6-10            | 1520            | "                | Yard - Bkgrnd                                |
| 8        | 252                | 10                        | 4-6-10            | 1600            | "                | Pasture                                      |
| 9        | 252                | 90                        | 4-6-10            | 1620            | "                | Pasture                                      |
| 10       | 252                | 05                        | 4-6-10            | 1635            | "                | Corn Row Crop                                |
| 11       | <del>SUS</del>     | <del></del>               | <del>4-7-10</del> | <del>1015</del> | <del>"</del>     | <del>P</del>                                 |
| 12       | 201                | Not Unk                   | 4-7-10            | 955             | "                | Pasture                                      |
| 13       | 201                | 201                       | 4-7-10            |                 |                  | on Val's sheet                               |
| 14       |                    | <del>201</del>            | <del>4-7-10</del> |                 | <del>See</del>   |  |
| 15       |                    |                           |                   |                 |                  |  |
| 16       |                    |                           |                   |                 |                  |  |
| 17       |                    |                           |                   |                 |                  |  |
| 18       |                    |                           |                   |                 |                  |  |
| 19       |                    |                           |                   |                 |                  |  |
| 20       |                    |                           |                   |                 |                  |  |
| 21       |                    |                           |                   |                 |                  |  |
| 22       |                    |                           |                   |                 |                  |  |
| 23       |                    |                           |                   |                 |                  |  |
| 24       |                    |                           |                   |                 |                  |  |
| 25       |                    |                           |                   |                 |                  |  |
| 26       |                    |                           |                   |                 |                  |  |
| 27       |                    |                           |                   |                 |                  |  |
| 28       |                    |                           |                   |                 |                  |  |
| 29       |                    |                           |                   |                 |                  |  |
| 30       |                    |                           |                   |                 |                  |  |
| 31       |                    |                           |                   |                 |                  |  |
| 32       |                    |                           |                   |                 |                  |  |



Photograph 1

Tannery Sludge Farm Fields Site  
Photo taken 4/6/10 by  
Michael Stroh,  
DEQ, HWP, SPF

Location ID 254. Background  
Yard



Photograph 2

Tannery Sludge Farm Fields Site  
Photo taken 4/6/10 by  
Michael Stroh,  
DEQ, HWP, SPF

Location ID 251, SU 144.  
Background farm field. Evenly  
sloped upland soybean field.



Photograph 3

Tannery Sludge Farm Fields Site  
Photo taken 4/6/10 by  
Michael Stroh,  
DEQ, HWP, SPF

Location ID 251, SU221.  
Background farm field. Evenly  
sloped fallow field with slight  
slope bordered by treeline.





Photograph 4

Tannery Sludge Farm Fields Site  
 Photo taken 4/6/10 by  
 Michael Stroh,  
 DEQ, HWP, SPF

Location ID 251, SU 409.5.  
 Background farm field. Just  
 north of SU 409 across gravel  
 road. Uniform looking pasture  
 with slight slope.



Photograph 5

Tannery Sludge Farm Fields Site  
 Photo taken 4/6/10 by  
 Michael Stroh,  
 DEQ, HWP, SPF

Location ID 251, SU 387.  
 Background farm field.  
 Soybean field, uniform upland  
 near gravel road.



Photograph 6

Tannery Sludge Farm Fields Site  
 Photo taken 4/6/10 by  
 Michael Stroh,  
 DEQ, HWP, SPF

Location ID 251, SU 387.  
 Background farm field.  
 Soybean field, uniform upland  
 near gravel road.



Photograph 7

Tannery Sludge Farm Fields Site

Photo taken 4/6/10 by

Michael Stroh,  
DEQ, HWP, SPF

Location ID 221, SU 162.

Target farm field. Uniform corn field with little topography.

Selected for triplicate SU QC samples.



Photograph 8

Tannery Sludge Farm Fields Site

Photo taken 4/6/10 by

Michael Stroh,  
DEQ, HWP, SPF

Location ID 221, SU 162.

Target farm field. Uniform corn field with little topography.

Selected for triplicate SU QC samples.



Photograph 9

Tannery Sludge Farm Fields Site

Photo taken 4/6/10 by

Michael Stroh,  
DEQ, HWP, SPF

Location ID 353.

Background residence Andrew County.



Photograph 10

Tannery Sludge Farm Fields Site

Photo taken 4/6/10 by

Michael Stroh,

DEQ, HWP, SPF

Location ID 353.

Background residence Andrew  
County.